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S. MacLean

1967

Journal:

1967 Barrow, Alaska  
feeding observation tables  
insect samples



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MacLean  
1967

Journal

3 June.

Los Angeles, Calif. to Barrow, Alaska

Left L.A. at 0140 via United Airlines to Seattle. Had to spend several hours there - met Hugh Nichols on his way back to Barrow from Poverty Program meeting in San Francisco. Arrived Fairbanks via Alaska Airlines about 10:00. Called George West from town, then spent the day running errands. Finally left for Barrow at 1700.

There was much snow on the Brooks Range and slope as far as we could see. Part of the trip was obscured by clouds. As we went under the overcast near Barrow saw several Ptarmigan hawks and 1 Golden Plover. The tundra here is exposed only on ridges, and these are >75% covered.

Spent the evening at a farewell party for Cliff and Norma Alderfer, who are going down to the Arctic. People report many owls in the area - one reside. I heard N.B.S. for much of the winter. Was a report of a burst of lemming activity in April, but not much since. Was pretty darn tired by the time things broke up. Saw a singing slate-colored (?) Junco singing in camp as I walked towards bed.



Maelson  
1967

Journal

4 June

Couldn't get any gear, it being  
Sunday. Last night and this morning  
were  $> 0^{\circ}$ , and good snow run-off  
is evident. Walked into Barrow and  
had to cross several streams. From Barrow  
went back to Browerville and walked along  
bluff over village lagoon. Longspurs were  
scattered along and displaying. Buntings far  
along. No shorebirds were seen.

5 June

Barrow, Alaska

Spent a productive morning outfitting  
clothing, equipment, word, etc. They are  
painting our town so I haven't been able  
to complete yet.

After lunch drove out to Beach Ridge  
near Micro Mts and walked around to  
Pitelka's Plot, then back. Red-backs were  
common - a number of pairs + several  
newly-arrived groups. Saw 2 baird's and  
heard a semi-pal display. Only 1 ♂ alpina  
gave full display, i.e. - it is still early.  
Ridge is ca. 80% snow covered. Saw a ♀  
snowy owl on P's plot - Taegers cruising  
the area.

Drove to Gasline Ridge for a quick  
look there - found 1 pair each, mostly  
pairs of red-backs, and scattered longspur -  
strikingly quiet.



Mackean  
1967

Journal

[5 June]

Lemming sign is scarce - found a small area of Beach Ridge with a human cutting, 1 nest (near 1) - unproductive. Certainly not enough mice to support the number of predators in the area.

After dinner walked into town to meet Wien, expecting him & Tschirhart. They came in; Wien didn't. Found 2 flocks of Old Squaws heading north. These were with a much more flies than I had observed than many other ducks, no Eiders.

One long-tailed jaeger flying near N.B.S. Snow geese were frequent in melt puddles along beach. (See spp. account).

6 June

Barrow, Alaska

Wrote field notes in the morning, then went in to see Brewer. The usual session - took all morning. About the usual result. Brewer wants to hire Sone as a secretary - that was his main message.

Weather warm, but dense fog. After lunch has time for a brief trip over to Beach Ridge - fog has activity level way down. No new species - at least, saw only alpica. Came in and rode into town with Merle to relay



Macken  
1967

[6 June]

MCB's message to Edna. Stayed in to meet the plane, which failed again. Good thing I came in on Saturday! Fog finally cleared off around midnight, but things were still quiet - saw semi-pal along the beach and heard Pomerine Jaeger territorial call.

1 June

### Bonney, Alaska

Ran up to Kuvuk to distribute barrels for fish traps along dock Robert Okpeaha and Toeb Woods. Put 9 at intervals along spit and 7 on gravel leading toward the Point facing in 7 random directions. Some have a little number in the snow - others have no snow at all. All have drainage holes and sans in the bottom. Now we just wait and see.

Drove about 3 miles out onto the ice to retrieve a wannigan. Most of the ice near shore is smooth. Eiders were flying low over the ice. Also saw many loons along the shore - probably headed for open water. Low smoke is far out - no sign of water. Whaling crews are still out by the lead.

While Robert and Toeb were



Mackean  
1967

Journal

[7 June] eating lunch I walked around the exposed tundra at Nuvuk. Saw the first Pectoral sandpipers of the year - 2 ♂♂ with several bairns! A flock of about 16 sandpipers was quite active in the area feeding (by vision) in ponds, but no display. Wanted to collect a few, but found I had 12 ga. shells for a 16 ga. shotgun. Has to settle for a few feeding observations.

Returned and rode into town with the men that day to go to Jeanne's 6<sup>th</sup> grade graduation. It was funny! Walked back about mid night. Again - semi-pal along road by N.B.S. Saw several flocks of Old Squaws, including one settled on large melt pond by 10th Pond.

8 June

Barrac, Alaska

Pitelka and Karl Tolonen arrived on last night's Wien flight - Karl after waiting in Fairbanks since Monday. The painting was finished in midday, so we put it in order for most of the morning, then walked into the drum area. Weather again is quite warm and still - wore one in a jacket without hat and gloves. Snow is going rapidly - much of the drum area has been



Macken  
1967

Journal

[8 June] exposed in the last 2 days. Saw white-crowned sparrow (♂) and heens tree sparrow. P. leucurus water pipit. Semi-pole were very numerous and active - chasing and displaying - but no birds.

After lunch the three of us took the weasel. Went first to West end of Gasline Ridge. Found the cut nest reported by Tom Case - now 3 eggs. Heard almost no Snipe-piper sounds - finally 3 redbacks began a display bout. Saw several pectorals fly by. Next to Gasline Ridge, then to 3 end of P's plot, up the plot, and in. Chulls were surprisingly numerous. Jaegers are abundant and becoming territorial. But still not much lemming sign!

Golden P. loons seen in good numbers - 1 displaying ♂ over W Gasline Ridge. 2 others were undisturbed by ♂ displaying above. Saw several groups of newly arrived pectorals - no display. I saw group of ca. 25 red phalaropes - the first of the year - fly over his plot.

Spent the evening working on specimen material. I will take 3 measurements on fresh bills: culmen length, culmen height taken as distal



Mackes  
1967

Journal

[8 June]

ends of nostrils, and bill width at the same point, measured on the mandible. Must be careful in the fields to avoid distorting the bill with the cotton was. We are sawing ca. 2 m<sup>3</sup> of peatland marsh now. The heads of all scotopacines for electrophoretic analysis by Alan Wilson at Berkeley. Took measurements, muscle + heart, and stomachs of the birds collected today. Then analyzed stomachs while FAP put up the sandpiper. Mostly tipular larvae in the stomachs.

Weather today - as the past few days - warm and clear in the morning, then colder and foggy in the afternoon and evening. This evening P. & I saw a peculiar colorless rainbow in the fog over Imik puk.

9 June

Barrow, Alaska

The criminally warm weather continues, and the snow is melting rapidly. Even Central Marsh is just beginning to appear. The area as a whole remains ca. 85% snow covered.

Saw the first flying insect - looks like a small bee. This is the earliest that I can recall seeing flying insects.



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1967

Journal

[9 June]

Drove over to Beach Ridge with FAP and Karl. P. went on to census his plot; Karl and I walked up Beach Ridge, toward Micro-met. Not a shorebird for first 500 m. or so, then found a flock of ca. 10 Pectorals. Chased these and a few redbacks around the area as I introduced Karl to the procedure of recoding feeding observations. He seemed to catch on well - I hope he keeps at it. Has to rush in the river shore of Honeybush Lagoon, then through drum area, to meet Zona for lunch.

After lunch and notes painted using other decimeter on a meter rule to use as scale for photographing habitat. Max and John Beck came by and occupied some time. Finally walked into drum area to check on semi-pal. Situation very different from yesterday morning - found 2 pairs with little interaction. Still no Bairds'. More drumming sign exposed by me here. Caught sight of one.

Returned and waited to see MR to ask if Zona and I could fly to Fairbanks for shopping and to discuss future shorebird work with George. Max said O.K. for an R&D flight down



Mackือน  
1967

Journal

9 June]

next Friday one back next Saturday. Went into town to relay this information learned that Joe Jr must report for the Navy on 11 July so we will try to move the date up to 8 July - one week earlier.

0 June

Barrow, Alaska

Weather more typical of early June a cold wind of 15+ knots from the east and a layer of ice on melt ponds.

Went over to gasline area near Micro Met with Tituska to photograph.

Finished color film in camera and shot 1 1/2 rolls of black and white (Plus X). In one location I was lying down shooting at the edge of the house where a lemming running across under the snow when a lemming appeared in the opening. Shot about 1 1/2 roll of him. We drove it out, and it turned out to be a juv.

Dicrostonyx. Yesterday's village sample included a Dicrostonyx, and at least 2 were caught locally during the winter. They seem to be up - traplines II & III should tell us.

More lemming signs are visible in areas recently exposed. Signs quite spotty, but not scarce. Trappers are still becoming territorial, and that next



Maelson  
1967

Journal

10 June]

now has 4 eggs. Found a 4 egg longspur nest.

Shoebill activity was very low! Saw 2 ♀ pectorals near theo Mtn; later a red-back W. of there and a semi-pal near Honeybucket lagoon - and that was all. P shot a pair of red backs as I walked down to go kart to return for lunch. The absence of red-backs is puzzling; the others we can expect to see - can, but alpine shovels be there and active. It is still too early to panic, but it is disturbing.

After lunch walked around Family lagoon. The wind was biting, but above freezing. Britton's area is nearly snow free .... and almost shoebill-free. 2 displaying ♂ semi-pals and 1 ♂ red back (presumably ♀'s around, too). Flock of ca. 8 Sanderlings feeding around melt ponds in gravel at Voth Road Tract.

Continued S of Fad, where kart joined me. Melt is advanced in the low polygon area there - polygon centers and troughs are flooded, the ridges exposed. Watched group of ca. 12 red phalaropes feeding in flooded polygons. Group of 6 pectorals also feeding in the



Mackea  
1967

Journal

10 June]

area. Saw only 1 Snow p. and a few red backs. Jaegers quite abundant there, sitting quietly. A pair of owls never took flight. A group of 7 ♂ + 1 ♀ pinkies flew from a melt pond. Collected observations on pectorals and phalaropes, then came in when Karl became chilled.

After dinner went north. This morning to catch area with Fish well on the tundra. The fog was shadowy, hiding a brick-like evening. Found a group of 5 by Faa and took them all - 3 ♂♂, 2 ♀♀. Traveled in and spent the rest of the evening processing these and 2 alpine collected by FAP this morning. Phalarope stomachs has more Pedicia than anything else - one stomach and esophagus was full of them.

11 June

Barrow, Alaska

Woke up into sun in the morning in beautiful warm, clear weather. The fog came in very quickly, however. It remained about freezing, but very dense fog. After church w/ Ahgeak's Emma and I walked down Browerville ridge now exposed except for ravines leading into lagoon. Bird activity there was very poor - a few scattered red backs and 2 displaying



Mackean  
1967

Tourist.

[11 June] semi-pal. Spent the day in town - saw Rev. Samuel Simmonas - returned late.

12 June

Barrow, Alaska

Day started foggy, but sun broke through and by noon it was warm and sunny. Walked out into the drum area - semi-pals were more abundant and active than previous visit.... and Baird's are finally here! A newly arrived group of 8 or more were spread above drum area - chasing and displaying. Found a ♂ King Eider in good plumage - injured or exhausted and not flying. Returns for camera and got an ARRI Exacta to use for black and white. Shot the last of the black and white in my camera on the drum and pit-falls and the King Eider, then shot mostly a roll of Kodachrome on the bus.

After lunch went out with Kast and Pitelka to the North Sea. Tommies near Calce. later to collect whale kast and I wandered towards Village Ridge to see if semi-pals and bairds have moved in there. They haven't. Watched a pair of pectorals in slopes low polygon area - their first nest opened up east of the ridge.



MacLean  
1967

Townsend

[12 June]

On the ridge - a dispersing group of pectorals provided today's observations. Found a lone piping nest. No semi-pels; no birds. The pectorals were displaying and offer the most hope - but so far this is really a discouraging year.

After dinner took a siesta, then processed specimens and stomachs and did my laundry.

Saw the first Ranunculus today - a number of them. In College Ridge I also caught a mostly fly-pollinated plant - those seen earlier. Close examination of the grounds reveals other flies - maybe it is time to check the tanglefoot sites.

13 June

Barrow, Alaska

Don Beaver arrives last night - met him at breakfast. Seems like a real good man - I think he'll work out well. After getting his clothing he headed straight out for the field (drum area) .... while we waited for him in the lab. Passed him on the way out. Pitelka and I drove to lower Gasline Ridge region. Wanted to go to Elson Lagoon area but too much wet slush on the ground to risk driving, so we returned essentially the



Mackean  
1967

Journal

B. June]

same route. Owl nest #2 - still 4 eggs. Checked other owls in the area. Baird sandpipers seem to be moving into the area. There is hope. Still widely spaced redbacks, pectorals in small groups. Stopped near Micro Mtn and spent an hour walking newly exposed areas to N. Saw several bairds and heard white-rumps, but still v. little activity there.

After lunch Karl and Dan took off towards Voth Pass; I and Tom went to South Beach Ridge. Foggy now, but still not very cold. Ridges are now nearly completely exposed; other areas just appearing. Today brought another day of good melt, but season is not at all advanced.

Found a 4-egg Turnstone nest as far south as of Beach Ridge, then wandered between them and the cliff's ridge. One of alpina was displaying persistently - optimistically, not much. Saw no semi-palms or fulvus. Red back pairs are scattered about and now incubating. Golden Plover density in this area is now about normal - birds are displaying or staking out, but don't appear to be incubating yet. Longspurs are still moving into new area as if



Mackean  
1967

Sunmet

13 June]

is exposed. Saw a ♀ longspur eat a tipulid larva. Flock of m. on P's plot.

In the evening we sat down with Karl and especially Don to discuss work for the summer. Don - after initially stating that his interests lie in the birds and : conflict with mine - reversed himself and caught on well to the tipulid and Chironomid life history and ecology study idea. We talked some thoughts around, and I think we will at least give it a good try. I think he should concentrate on tipulids this year to avoid the taxonomic mess, and am promoting that idea just a little.

Afterwards made a late run over to ponds near F10 and took 8 paper bags and cones for bird-louse extraction. See those up, wrote notes, and got to bed.

14 June

Barrow, Alaska

The wind has shifted to the west, bringing much warmer weather - alternately clear and high clouds. Some rain in the morning, and more rain in the evening. Got an early start. Throw our gear in car - dropped Karl at Anchorage, then V. along with



Hackney  
1967

Journal

[4 June] I drove around Voth Creek and drove to N. end of Footprint lake. this is largely full with water and slush now to a depth of over 10". Saw a flock of ca. 160 Cinnamon teal along and was on way to a "footprint".  
Extinctive about as before - dried. Then back to Voth Creek and to the Minne Mtn. Game Refuge with traps.  
Hadn't been over Voth Creek. A party driving group of white pectorals was leaving and began to run up the sloping trees. At Minne Mtn. took a few hearing observations, found a tipular larva, the only in the area, in the local brush and under stones.

Saw our usual in the refuge in the afternoon, then got trap traps and equipment to work with. Common animals seen while collecting were - 10 Tipular, 3 Lipula, 1 amphipod. If amphipods are this abundant, why aren't they found in stomachs? Either they are not accessible or are not palatable. Could test the latter with feeding trials. Measured the tipular larvae as a start towards determining size distributions. Set up a system for freezing animals and



MacLean  
1967

Journal

4 June]

counting as they are collected.

After dinner ~~wrote~~ went to town with John and Bill Beck. John and I walked down Browerville Ridge to Village Ridge as rain started. Heard clack of S. parvirostris and scattered songbirds. A baird was singing over Browerville. Near NBS encountered a surprising flock of Peckoras - they keep coming in and offering hope - they are certainly more abundant than birds and the pair of Arctic Pigeons may be on with Ridge. The rain was coming and today after the time of sunset, the night it was raining hard. Had to take off my parka without walking. Village upon which was high at the end - snow must be melting rapidly. There is still much of it out there - ridges almost completely exposed, low places were snow sticking masses.

Put in a work order for another bank of birdlife journals, but I don't expect prompt action.

Barrow, Alaska.

Removed and measured more *Pedicia* from Farlowe collections. Sore back kept me immobilized in the morning - caught

15 June



MacLean  
1967

Journal

15 June] up on field notes and stomachs and chased around in preparation for trip to Fairbanks tomorrow. After lunch went into the drum area. Checked pitfall traps - nothing yet. Several pairs of birds were very active. Watched behavior of these and semi-pals, including bairns nest-cup displays and copulation. Found a red-back nest close to camp in open part of drum area. A pair of pin-tails is acting as if they may nest. Longspur display is just about over. Still feeling badly, so came in and lay down until dinner.

after dinner walked into town and down Browerville Ridge. Very quiet - all forms of display were about over here. Heard bursts of semi-pal and red-back, but no well developed slasher display.

Barrow to Fairbanks, Alaska

Departure at 0830 - amazing for a PL. Stopped at Umiat to drop gas and supplies for Caves project. Spoke briefly with Caves - he reported all migrations were abundant. Saw a few birds in the area. Weather was quite warm - in the 70's - and mosquitoes were already out. After a bumpy ride

6 June



MacLean  
1967

Journal

16 June]

over the Brooks Range down to Fairbanks. Temperature over 80° there, but no mosquitoes yet. Spent the rest of the day eating and shopping.

7 June

Fairbanks to Ketchikan, Alaska.

Spent the morning at the laboratory of Zoophysiology talking with Dr. George West about the possibilities of post-doc work on shorebird metabolism and energetics. The idea is to complement work in progress on shorebird feeding and work, hopefully, to begin on insects to give an accurate picture of community interaction at the insect-shorebird level. We decided to concentrate on red-backs in the summer, probably birds netted in migration, and work on Golden Plovers year around to try to get factors influencing timing and control of annual cycle events. This will require a winter colony of Plovers - the Pacific are not enough to keep >1 species year round. The first step is to try to get some alpina and P.d. down to Fairbanks this summer to see how they do in captivity.

The day was again hot! (80°F.) Did more shopping - spent our last



Mackea  
1967

Torrelak

17 June] Dime - then off to the airport and back off for Barrow about 5:15 P.M. Much smoother ride this time. Landed about 8:45 - quick flight back. Weather still quite warm, and the snow melt in the past two days was evident. After wasting time waiting for a ride into town, deposited Edna and her various purchases and returned to bed.

18 June

Barrow, Alaska

Up for breakfast, then took wallet and painted it down in the garage. Voth Creek is now crossable so made on to place over to South Branch. Flock of Arctic Pectorals - common. Then drove to area east of Footprint Lake and spent the rest of the morning and all afternoon walking the area.

Season is definitely floristically advanced. Ranunculus along shore of Footprint lake are out in full. In places 3' of new green grass can be seen. Bumblebees have been seen for a few days, now.

Birds, however, are by no means advanced. Watched several pairs of tundra swans, much display was evident; I encountered and saw one capulation. Many pairs together in mating time - the



MacLean  
1967

Journal

8 June

evidence of incubation. Pectorals were confusing - ♂♂ were very abundant but ♀♀ were scarce. ♂♂ were displaying and loosely territorial. They quickly chased any female they managed to flush. Saw a number of solitary Buff-Breasts, with some wing waving.

Walked over a lot of tundra without seeing a ♀ pectoral off of a nest; also only 1 alpina. Shot a ♂ + ♀ pectoral, then an plover on the way in and arrived in time for a late dinner.

Spent the evening working on these 3 specimens and others collected in past few days.

19 June

Barrow, Alaska

Spent the morning finishing up specimens. Bill, Tim, and Karl went to mark birds so Tom and Dan prepared mist net while I stayed out of the way by putting hardware cloth racks in our new bank of 8 berlese funnels.

Went out to the drum area to put the mist net into operation. Set it by a telephone pole and tried to catch longspurs and sandpipers, with little success. Decided to leave the net set and see what flies into it.



Mackeson  
1967

Journal

[19 June]

Don and I then walked towards Micro-Mex, talking about feeding observations and the insect problem. Drew 2 plots of O. melanotos which we used for feeding observations. Checked the trapline sites near Micro-Mex - they are now ready to go. Found a 2 egg jaynest 100 m. west of trapline sites and 80 m. N. of jayline.

Discussed a sampling program with Don. We concluded that this summer should be used to develop the sampling procedure, since most of the ecological information will result from accurate quantitative data regarding numbers, dispersion, etc. I think Don will do very well.

Might also comment that Tom has really caught on to the study of extra males in the longspur population. He is taking the initiative in thinking of approaches to the problem and is putting in a lot of time as well.

After dinner Tom, Don, and I went out to trapline I and II. I went along as far as there - then, I went in with shotgun ready to reduce any peccoral flocks. Found 3 buffies on



MacLean  
1967

Journal

[19 June] the polygons N. of Alluvialia - 1 displaying  
♂ + 2 presumed ♀. No pectorals.  
The west wind was unusual way from  
East wind, bringing cold, foggy weather  
more typical of June.

Went into Barrow and took  
bus to the high area S.E. of town  
near the ocean to look for birds  
there. Saw none. A pair of Bairds  
near Back Construction Camp - otherwise  
nothing. This area characteristically  
supports both Baird and Baird-pis.  
Saw the first flowering Lacistema  
leuconeura there. Interestingly it was  
completely out on the south-facing  
side, but not yet flowering on the  
north-facing; proof of reduced light  
intensity of the midnight sun. Grass  
growth is well along there - 3 inches  
in places. Saw a bumblebee. Returned  
to Essa's and spent rest of the night  
and part of the morning addressing envelope

Barrow, Alaska

Spent the morning asleep. Walker  
crossed the lab, then rode into town  
with Merle to get our blood tests.  
Returned too late for the fish so  
cleaned up stomachs and barrels. Has

20 June



Nacken  
1967

## Journal

[20 June] a good conversation with Tom and Tom.  
Put up a longspur for Tom to use in eliciting behavior and possibly luring it into traps for banding. Not too bad, for the first live mount in a while.

Spent the rest of the evening at a lasagna party at Rita Henske's. On the way in I saw a ♂ buff-breast displaying along the side of the road.

21 June

### Barron, Alaska

the West wind is back, bringing Bering Sea weather - high overcast, warm, and rain. Drove over to Beach Ridge and dropped Pitelka, then ~~Bob~~ Don and I drove to area of Micromer Tanglefoot to take soil cores for insect extraction. Took 2 cores from each of high polygonal sparse graminium, low polygon, polygon tough, wet marsh, and pond edge, using our metal corer. Don will dry the wetter samples in the berlese funnel, and Hans pick all samples. Right now, in addition to censusing, we want to find out how much Don can hope to effectively sample.

Don then drove to check on



Mackay  
1967

Journal

21 June] Pitelka in the rain while I walked in with the shotgun to dispatch some pectorals from a flock feeding between dacs and Macmillan. Collected 4, then walked in. Mac Tom along the way and talked about Longspurs, then came in.

Processed specimens in the afternoon - the pectorals were nearly empty. Also cleaned up a trapline alpine and Ph. fulicariae. So far stomach collection leans strongly towards melanotos - maybe I should go inland to do some collecting.

After dinner drove over towards traplines II & III with Tom and Don. Saw a flock of pectorals and 2 turnstones in Central Marsh. Don collected 1. Walked (or waded) over into the marsh to photograph the birds and take feeding observations. They were feeding on the small islands of ~~saturated~~ saturated grounds coming through the water. [Specimen - SN 730]

Walked over to P's census plot - very quiet there. Photographed an owl, then watched a pair of plovers - probably not yet incubating. Drove back to road and left off Don and Tom, then went to Gasline Ridge to check buffy and



MacBride  
1967

Journal

21 June]

other activity there. There wasn't much - one buff breasted and the occasional pectoral and red-back. Finally came in around nine night.

Magnificent weather this evening - warm and still. It was too nice to come in. About 11:30 the clouds came in.

22 June

Barrow, Alaska

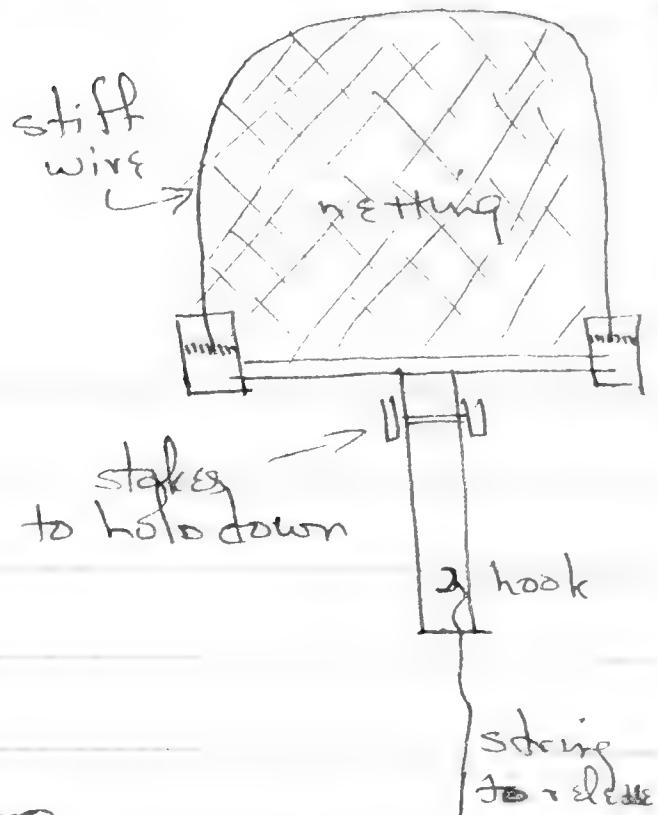
End of a brief, unfortunate chapter - Karl Tolonen departed today for Arizona. It was obvious that he wasn't doing us or himself much good, and he was making us uncomfortable. I think Dr. Pitelka acted rightly. Remained at the lab doing odd jobs in the morning until this was taken care of. Being useless in the afternoon, Tom, FAP, and I walked over into the Drum area to try to catch & longspurs from the nest with the insect net. Failed at this, but caught and banded a semi-pal and a baird. Found a new baird nest. Weather turning rotten - it was now cold, windy, and snowing.

Returned to the lab and, with Tom and Don, constructed a bow trap activated by set traps. Took



Mackeson  
1967

Journal



[22 June] this out to the Drum area in the evening to give it a try. Tom and Don's tries to catch longspurs while FAP and I went off to photograph buffies. Shot 1 roll of Plus-X and a roll of high-speed ectachrome. Got - I think - good shots of wing fluffing and the  display, then Don and P returned to the lab; Tom and I trapped and banded ♀ longspurs and a Baird sandpiper from the nests.

23 June

Barrow, Alaska

Took off on foot through the Drum area and found a 4-egg Baird nest. Walked up along the edge of Family Lagoon to Family Creek, then walked the area S and East of Family lagoon and creek. Very quiet. Most amazing are red-backs - they are widely scattered and covering immense areas. Watched a pair of plovers, but failed to find the nest. ♂ melanotos are still scattered about but also in flocks. ♀♀ are just not seen and we have not yet scared up a nest. Phalaropes -



Macken  
1967

# Journal

[23 June] both ♂♂ and ♀♀, are fairly abundant, but only 1 nest thus far. Checked the owl nest - still sitting on 4 eggs. With that - had to rush in for lunch. On the way, saw no sign of the tanglefoot site jaeger.

After lunch - drove over to trapline 3A-3B with Don and Tom. While Don took son samples I made a quick tour of the North Area sense latu, with results about as this morning - a flock of ♂ pectorals came by, but disappeared after I returned for the shot gun. Drove Tom back to the lab and exchanged him for Mary Shishios - here to observe owls for Geissaman. Then drove back to Village Ridge. Owls are still numerous there - ca. 10 in sight at once - but no nesting. Birds were mostly in the lee of mounds trying to stay warm.

Checked the alpine nest - now 4 eggs. Found a 1-egg Golden Plover nest! On the ridge - no bams or semi-pal! Walked the area in a cold wind with occasional blowing snow, then returned to the wedsel. Found Tom sitting in the back of the wedsel - his enthusiasm is not



Maebeck  
1967

Journal

[23 June]

yes complete! Drove back via road which parallels the ridge, heading toward FAA installation. Saw 2 turnstones (rare birds this year) and a Baird busily feeding along the way.

Spent the evening in Barrow buying a license (she paid for it!) and addressing more damn invitations. Finally finished those darn things.

24 June

Barrow, Alaska

Wrote notes, then went over into Drum Area with FAP and took to complete the map of the area. In a short time found a new semi-pal and golden plover nest as well as a Baird nest next to a previously staked semi-pal nest.

In the afternoon Don and I glued up the Tanglefoot slats then headed over to place them. Took the owl girl (Mary Shields) over to the W. Beach Ridge Owl nest - she stood and 'ooo'ed in awe, then proceeded to stay and watch the nest until 8:00 P.M.

In setting the boards found that frost heaving has changed the ground contour so that boards fitting floor last year were not so now. Made the necessary alterations and drove numbers



Maebeck

Journal

[24 June] in the stakes. Drove along Central Hwy road and found a flock of 29. All adults. Collected 4. Also collected a golden plover from a flock of 10. ~~Set~~ <sup>(placed)</sup> the 20 Black Phoe trap-pots, then returned to Black Ridge, passing one trap to activate Hodges pit-fall trap there. Found and turned 10 of the milk can type - the same as the drum area set. Finally returned for cocktail hour.

Set up a nest check system for the birds banded by trap. By trap record we can get good data without the need of systematic nest checking. If not something else will have to be done.

In the evening went out in a cat, wing and banded 3 more hires, making a total of 5 nests with 1 banded bird (out of a total of 3 nests). The net has worked without fail - 2 birds would not get on the nest, but once sitting, the bird is ours.

25 June

Barrow, Alaska

Spent the morning writing notes - there was a little catching up to do. Did a live mount of the Golden Plover collected yesterday, then spent all evening working



Mackean  
1967

Journal

25 June]

on specimen material. After dinner walked our past banded baird nests and checked traplines IX and X. Weather was again cold and foggy - not much activity.

26 June

Barrow, Alaska

Made a nest check before going to bed, and another first thing in the morning. Long incubation stands seem to be emerging, but not clearly 12 hours or some other simple pattern. Went out again to check traplines IX + X. Caught 2 bairds jumping between the lines, then walked in along family lagoon. Found a 4-egg semi-pal nest above a beehive of aacs, and another in the drum area close to camp.

Spoke w/ Brewer re. the problems of the owl girl. We decided to take a local survey flight to look for nests, then fly to Wainwright and back to look for concentrations of owls. Took off just after lunch. Looked for the Wohlslag Slough nest without success, then carefully searched around the gas well. Lots of owls, but no nests. Looked long enough to convince ourselves. About this time the owl girl asked where they keep the paper bags on the air plane.



Nadeau  
1967

Journal

[26 June] She looks like she could use one, so Shepard put down on the Village Strip and we completed the trip to Wainwright and back without her. Absolutely zero owls between Barrow and Skull Cliff, then widely spaced birds to Wainwright. Flew down 1/2 mile inland and back ca. 2 km. inland, and got the same impression both ways. Saw very few jaegers, occasional flocks of pectoral sandpipers, groups of caribou around big C, 1 Arctic Fox at the N. end of Peary Bay.

Returns just before dinner. In the evening went into Barrow. Weather getting worse - cold and foggy, with snow between 11:00 and 12:00 which remains on the grounds. After walking back to camp, we no one to check the baird nests before quitting for the day.

Barrow, Alaska

Up in time to make morning check of the baird nests. There is still more to be found in the drum area. After lunch Dan and I went over toward the Micro-Mac tanglefoots. Found the plover nest S. of the drum area on AAC polygons - 4 eggs. Again saw bairds around

7 June



MacLean  
1967

Journal

27 June] trapline IV & V. About 4-8 sm. ad. Dipters were removed from each tanglefoot board. We then walked to Family Lagoon and followed the lagoon toward Family Creek. Saw very little! Walked in via Baird nests and found a 2-egg nest 40 m. S. of #5.

Again spent the evening in Barrow. Walked out toward Browerville Ridge, but didn't get too far because of falling snow. Returned around 2:00 A.M. and went out to Drum Area nests, took camera to photograph birds sitting in the snow - got some pictures of golden plover, but bairds wouldn't sit tightly enough.

8 June

Barrow, Alaska

again up..... after breakfast. Checked bairdinests - more activity and excess birds in the drum area. After lunch had to go into Town with Merle to cash a check and run errands. Weather now clear and cool, but fog came in around dinner time. In the evening drove out to collect some birds. Found a loose flock of golden plovers and collected 2. Also collected a semi-pal (from 3) and 2 phalaropes from a flock feeding on flooded grounds. Drove on toward S. end of Beach Ridge, but



Nacken  
1967

Journal

[28 June] came in when snow started falling and spent the rest of the evening working on these specimens. Made a late check of the baird nests before bed.

29 June

Barrow, Alaska

Up for the baird check - found another new nest - the 4<sup>th</sup> of the complex around nest #5. Spent the rest of the morning writing notes.

Most of the afternoon was occupied putting netting on the emergence traps. These are simply wooden frames covered by netting - in the shape of a pyramid - to capture insects as they emerge from a known area of tundra. Ours are 1 m. square on the bottom. I suggested we get a pair of Taylor maximum-minimum recording thermometers and place 1 inside and 1 outside of the traps to see how they alter the temperature of the micro-environment.

After dinner I was drafted (with little resistance) to play in the camp v. village softball game. Camp won - an accident. Returned for the latest yr. check of the baird nests - finished about 4:00 A.M. The birds seem to be getting off of their nests sooner



Machado  
1967

Journal

[29 June]

now - maybe our frequent checking has sensitized them. Nest #8 is particularly difficult.

30 June

Barrow, Alaska

rose it up for lunch. Afterwards I glued up tanglefoot while Dan prepared doors on emergence traps. He wants to be able to open and close them to remove insects as will. Our vaccine dropper, if we can make it work, would be good for this. Made card board shilds for the two max-min thermometers, then loaded the whole mess on the vessel and took off for the Nien Meo tanglefoot (area I). Changes the boards and set 3 emergence traps there, then drove around to the South Beach Ridge site (II) and did the same. On the way removed 2 plovers from Central Marsh, and got 2 melanotos on the way back.

Weather was pleasant - bright sunshine, although thermometers read only 38°F. A large ad. Chironomus was found abundantly over the tundra, and the first adult tipulids appeared - a ♂ tipula on one of the (II) tanglefoots and a ♂ Pionocera found when Dan



Mackean  
1967

# Journal

30 June]

and I checked the pit-fall traps  
as the Beach Ridge Crossing on the  
way in.

Went to Jimmy Stott's wedding at  
the Catholic Church in Barrow in the  
evening.

July

## Barrow Alaska

Up late, in time for a quick run  
out to the Baird Nests. Spent the  
afternoon doing stomachs - the two  
plovers were stuffed with Prionocera  
larvae - more than 100 in the 2 stomachs.  
Buff-breasts contained adult tipelios (line-  
eggs) and Chironomids. Pectorals are  
still feeding on larvae. Afterwards,  
to avoid going stir-crazy, walked out  
into the drum area to check Baird  
nests. Also emptied drum area pit-  
fall traps - still not much - and  
brought in excess cans to use in  
establishing another pit-fall area on  
the beach ridge. Weather still cool,  
windy, foggy.

Spent the evening in town making  
wedding arrangements and watching  
Steve Hopson's house burn.



MacLean  
1967

Journal

2 July

Barrow, Alaska

Spent much of the day in town for church and ballgame. Returned in the evening and counted tanglefoot slats while doing my laundry.

3 July

Barrow, Alaska

Up for breakfast! Went into drum area and discovered that shorebird nests are hatching. Baird nest #1 was empty, and both adults fussing nearby. Nest #12 is empty, but probably due to predation. Returned to lab and picked up bands and Custer and went back out. Banded 3 young from baird nest #1, 3 still in ~~nest~~ alpine nest nearby, t. pusillus within a few feet of baird nest #5. Then went over and banded 3 of Toni's longspurs. After that banded 1 bird (ad.) incubating nest (baird) #11, then in for lunch.

Found that our new wins-net system is now complete - picked it up. As usual, a DL size 10x what was needed - a fancy brass and tacked aluminum thing. As a result, we probably won't be able to get a second system. This one can be changed



Hackean  
1967

Journal

slightly to double it's capacity - I'll save details until we have it operational.

Next glues up tanglefoots for today's charge. Inspiration struck - decided to use beer cans for additional pit fall array. knocked the tops off of 10 cans to put near micro-met, then Dan and I hidroed the sides.



Hachem  
1967

Journal

July

Barrow, Alaska

Back to work. talked with Dr. P. Telka about Don's decision to abscond on the insect work as thesis material. Don will spend the rest of the summer working with me. With the shorebirds so low here I want to concentrate on the insects for the remainder of the season, so this won't offer much of a change for Don. I would like to address the questions of lifecycle and size distribution as well as spatial distribution this season. They ran some transects in my absence that definitely indicate sex ratios strongly diverging from 1:1 in all 3 species. These should be repeated. Long transects to sample habitat distribution should also be begun soon.

Took Esra to shooting station to get her sewing the nets for our aerial insect sampling system, then returned for lunch. Afterwards picked up nets (and Esra) and inserted tygon loops of 1m. circumference into rim of nets. By the time we finished rain was pouring down again (it rained very hard about 8:00 A.M.) so we decided to count tangle foot instead of installing nets. Accidentally started



MacLean  
1967

Journal

counting one that Don has already done, but in doing so discovered differences in the way we have been scoring insects. Decided to divide listera into the tipular species, Nematocerans (Chironomus-type flies), and Brachycerans (Muscidae-type flies). This should allow easy and accurate counting, and I can adjust past data.

Home (how 'bow that!) for dinner, then Edna, Don, and I went out towards Central Marsh and Micro-Mex. Took 3 Golden Plovers from a flock which also included pectorals, red-backs, and turnstones. Found another flock in Central Marsh and chased it over towards Pow Main. Collected 6, and a red-back from a group of 6 standing by watching them. Next took 11 sandpipers from Central Marsh hoping to extract Pedicia larvae. Then the Micro-Mex wind net system and installed the nets. Try 'em, it works. A wind of about 12 knots was blowing and it was enough to turn the nets - the bottom doesn't turn too well - it gets most of the weight and the least wind. Some further modification is probably called for, but the basic



MacLean  
1967

Journal

design will work. Don photographs the occasion, then we return to our 300 cars in Berkeley funnel, clean up the resultant mess, plan activities for the morrow, and so to bed.

15 July

Barrow, Alaska

Last night was cold and windy, with no adult insects conspicuous on the tundra surface. Today was calm and warm, and *Tipulids* were very abundant. Spent the morning counting and cleaning the tanglefoot boards, then Don, Tom, and I drove out towards site II.

Dropped Tom at trapline VII, and bags of traps at VIII, II, & VI. changed tanglefoots II, then Don used vacuum motor to collect tipulids. Then ran out of gas, and we both had picked good numbers of *Tipula* and *Pedicia* to use in caloric determinations. The prompt emergence response to today's good weather was impressive.

Drove to site I - changed boards and removed a large amount of material (ca. 1/2 gallon) from pig hill traps. Our wind net system is still intact - nets in place.

In the evening drove out with Don



Hackman  
1967

Journal

and Don, intending to do tipulid transect. Saw a flock of birds on the N. side of the Beach Ridge which includes golden Plovers, Red-backs, Pectorals, turnstones, and 1 Curlew Sandpiper! Chased the latter until the entire flock flew back toward feeding observations before losing them. Drove on, and found Pectorals abundant and feeding actively in Central Marsh. First group of 16 was being measured. Another group of ca. 30 was pecking on undisturbed tundra; collected 5 of these with 2 shots. Tipulids were way down from the afternoon, so we decided to hope for warm weather tomorrow and do the transects then. Returned to give the pectorals their drink of formaldehyde, drove briefly to Shooting Station, then returned to write notes. Cool fog rolled in late, and wind shifted to the east - not a good sign for tipulid-transect weather tomorrow.

Encountered a red-back with 4 young juveniles in elevated part of Central Marsh and two broods of young semi-pals today. Aacs golden Plover is still incubating.

The tundra is quite a bit wetter after the recent rains. Standing water appears



MacLean  
1967

Journal

in many places.

16 July

Barrow, Alaska

Up late after a much-needed rest. Weather was bad : fog and rain. No good for tipulid transect, so drove over with Edna and Tom to try to trap plovers. Nest East of aacs was hatching - watched a bird crawl out of the egg. Left Tom there to try the dead-fall trap and drove to the nest on Pitmeek's Bluff to try the bow net. Set it and spent 2 minutes untangling the damn string, then drove to shooting station to pick up Beaver. Back to the nest - nothing, so brought the trap back. Found that Tom had left - the trap set at the aacs nest and gone in. The adult was not gone on the nest, and 1 young was dead, another nearby sc. Removed the trap and drove in. As long as we could see the adult did not get on the nest.

Next took mist net and several hardware cloth strips with monofilament loops out to the nest South of Fdd. Found the bird still incubating, and caught it with the mist net. Drove in and got this and a ♀ pectoral that Tom caught in the trapline. & gave them ♂ Tipula



Mackeson  
1967

Journal

[16 July]

from the car traps.]

Cocktails at our bar with our crew,  
Ray Strosse, and Dan Kangas before dinner  
at Vinnell. Fed the birds again. Too  
foggy for wine tonight, so they will have  
to wait until tomorrow. Spent the  
rest of the evening writing notes and transcribing  
tanglefoot data taken by FAP and Don  
while I was away.

17 July

Barrow, Alaska

Weather improved in the morning and  
Don and I prepared to do Tipulid transects  
after lunch. Weather quickly went all to  
hell, and by the time we were out it  
was raining, with very few adult Tipulids  
to be seen.

Spent the morning working on  
specimen backlog. Preserved stomachs for  
later analysis. kept 3 whole bodies of golden  
plovers for fat extraction - 1 was very fat.  
Went out promptly at 1300, and immediately had  
the wedel track slide off the drive wheel.  
Started on foot as rain began to fall. Walked  
across Beach Ridge, corner of Central  
Marsh, and onto Titelka's Plot looking  
for Tipulids, and finding few - not enough to  
do the transect. Took feeding observations,  
then returned to the sick wedel. golden



Mackson  
1967

Journal

Plovers near AACs were near nest cyp., now empty, and greatly disturbed but we could not find any young. Took the gear from the weasel and walked in. Collected a fuscolollis and pusillus, from ponds in the down area on the way.

In the evening Don and I went out to trap plovers with the mist net. Found 1 juv. with the 2 AACs adults and used it to catch 1 of these. Next went to nest on P's Plot and caught the bird incubating there. Both birds were easy to catch. Took 16 sand eiders from wet tundra East of the road to Beach Ridge, then came in.

Again a mixed flock - this time more alpina than melanotos - along N. Beach Ridge. Couldn't get close enough to collect. With tipulids down due to weather, I would like to see what they are eating. I think there is still plenty of food. No Brachycerans are about now.

18 July

Barrow, Alaska

Tanglefoot change day, with an entire s-r to count first. Weather was foggy but Wren managed to get in, so



Mackeen  
1967

Journal

See the plovers and send them off to Fairbanks. Called Institute of Arctic Biology and learned that yesterday's birds arrived in good shape.

Spent the rest of the morning and early afternoon counting, cleaning, and preparing tanglefoot strips, then went out with Tom and Dan. It was now very foggy - visibility not  $> 200$  m. I spent some time in inducing Tom to leave observations while Dan changed site I. Emptied the pit-fall cans and took down the windmill system to bring in the sparer pieces for modification, then drove on. Pass one flock of ca 30 alpine near Micro-Met and another of ca. 30 melanotos on the Beach Ridge. Changed these boards. Numbers 3 and 4 were under water and had to be relocated on drier ground.

In the evening went to lab. with Tom and sorted and counted items and vacuum picked Tipulidae samples and can-trap sample from tray. Vacuum meter failed to pick up most tipulids - especially with Lutz & Tipula and Pedicia. Hans picked samples containing proportionately few Artitipula than can-trap samples.



Hacken  
1967

# Journal

[18 July]

Collected 1 F.d. and 6 alpina in the afternoon to check stomach contents while I know tipulids are down. Until the work load goes down, however, I will pickle the stomachs for later analysis.

19 July

## Barrow, Alaska

Spent most of the day counting the large tipulid sample collected in the can traps between 3 and 15 July. In tipula:

tipula : 1600 ♂ : 425 ♀

Prionocera : 100♂ : 1♀

Pecicia : 474♂ : 30♀

i.e. - the sex ratio diverges most from 1 in tipula, not Pecicia. Also, this differs (I'll wager significantly) from the results for tipula 15-18 July.

After this wrote up descriptions of feeding observations - short form (see attach.) and long-form - and gave them to Zorn to type. Finished bottling and labeling tipulid samples, then made Birnik feed duck soup dinner with the in-laws. Went back to lab later to freeze tipulid material and measure skulls, then home to write notes.

20 July

## Barrow, Alaska

In the morning Don and I counted the tangle foots. Insects are way down from last time. Decided to



Mackean  
1967

Journal

20 July

(finally) get moving on habitat transect work. Places a 1 km. grid over a map of our study area - down to lower Pasture Ridge and Elkpile Slough and West to Village Ridge and Village haycon. This gives about 18 complete 1 km. lengths that can be used for transects. Decides to try procedure of randomly selecting a kilometer from the grid and walk along it evaluating the habitat (using the jezoir observation scheme) at 5 m. intervals, giving 200 points per km. Prints a data sheet for this and in the afternoon went out with FAP and Don to try it out on a km. starting at North Meadow Lake and heading West towards mouth of Family Creek. After first 100 points ( $\frac{1}{2}$  km) decides to reduce the number of sample points to 100 / km. (one each 1 km.). Using this system we did the last  $\frac{1}{2}$  km in just  $\frac{1}{2}$  hour. In general we all agree well in categorizing the sites - encouraging, jaundicing observations. Don and I will begin tomorrow morning and try to complete at least 1 km/day for the next 6 days. We will have to



Nashua  
1967

JOURNAL

-20 July

Did it with our borrowed bird receiver.

Saw very few birds. A very young juvenile pectoral (?) near Mine Hill, apparently lost or deserted and giving distress calls - a ♀ semi-pel harassing a passing long-tailed jaeger, a pair of parasitic jaegers in the distance, snowy at eating a glaucous gull.

Came to the lab in the evening to clean up specimens and other lab work in preparation for the big transect push beginning tomorrow.

21 July

Barrow, Alaska

Out for habitat transects while Tom checked trap lines. We worked together from Family Hagcan to point B3, and then from B3 to H2. Then on their we continued alone, so mine from B2 to C2 while I walked around, Colle later and, Gordon, Trinity Circle, and his C-E to Family Hagcan to complete the B2-C2 km. Then Tom & I converged from C2 and C3 to complete the square - I had done in a morning. Missed our meeting point on the last km. by 1 (one) meter - amazing.

Saw a flock of ca. 10 melanotos.



MacLean  
1967

Journal

21 July]

Feeding on old wood road by Foothills  
a ♀ melanotos near Family Lagoon this  
definitely has young. Elebs of alpina  
were common. Tom! took some  
feeding observations on alpina and Pl.  
Dominica. It will really help if he can  
get just a few observations each day.

Morning judging successful. Especially good  
to know that I won't be disturbed transects.

After lunch we counted, cleaned,  
and prepared tanglefoot, then loaded  
an impressive pile of equipment into the  
wessel. Got as far as aacs, where a  
bogey sheep snapper. Return en route  
with Frankie Elk pie. Collected a vacuum  
sample for spiders and bracky cavers  
while the vessel was repaired, then  
continued to tanglefoot I. Changed bags,  
checked emergence traps, emptied can  
traps, and reassembled wins-net  
array in it's (hopefully) final form. It  
looks good.

Next move to tanglefoot II. Changed  
bags, checked emergence traps, and  
began laying 25 new can traps in  
the form of a cross with arms of 6  
cans each at 3' peer intervals. Finally  
took 18 soot cavers - 8 from unbroken



MacLean  
1967

Journal

[21 July] Wash turned over 8 from roost in Central Marsh - for berlesse extraction. Returns about 6:30. Loused up my down back removing crap from tracks of the weasel. Took it easy writing notes and sleeping to try to let the back recover.

Much fewer birds in the area today. The conspicuous flocks of plovers and pectorals are not to be seen.

22 July

Barron, Alaska

Spent the morning working in the lab waiting for Mr. & Mrs. John Boyd - directors to us by laboratory of Zoophysiology, U. of A. He is a grad student with Schlaefer at Johns Hopkins, working on environmental physiology of penguins. They brought some Penguins up to the U. of A., and are now training them to walk them to lunch, for two captive red-backs, then take them to the fish.

Weather - clear and windy, and few birds in the area. Dan and I did two km. habitat transects each in Hedges' Morass. Checked the plover nest on P's plot - now empty. Saw only a few plovers and red-backs in the Morass, also one small flock of



Haeckel  
1967

melandros near the corner of Central Marsh.

After dinner took the two red backs in to Wien. [Colles Dr. West in the afternoon; he says that all the plovers and the pectoral are in good shape, but the red-back never ate and died soon after arrival.] took the wader out to Duck Camp planning to do a transect, but bridge to Holmes' Marsh has washed out and we didn't want to drive around, so we just visited with Alyak, and then home to bed.

23 July

Barrow, Alaska

Up early (for Sunday) to do two ~~vegetation~~ habitat transects: N. Meadow lake to aacs, and East to near C.G.S. Weather cool and windy. Drove in with Edna, then back out with Don to do 2 more transects and collect soil samples for Berlese extraction. Saw a Baird w/ young in low, pon dominated tundra between No. & So. Meadow Lakes; red-back with young in low marsh n. of Festine Ridge.

After dinner at Vinnell took Edna to the movie, then went back to lab to put soil cores into Berlese funnels and



Mackean  
1967

Journal

write notes.

24 July

Barrow, Alaska

Dr. Pitelka left for Berkeley on the morning flight. After his departure Dan, Tom, and I went out to the NE corner of Central Marsh. Dan and I did a habitat transect each while Tom looked for longspurs. Good weather, but few birds - a golden plover with two black-bellied plovers in the marsh, alpina with large juveniles in a drier part of the marsh - no large flocks.

Afternoon was tanglefoot day, with our usual wedel problems. Got out to ads but returned because of sounds of grinding bedrings. Next wedel made it from the shop to our lab, then wouldn't start. Finally made it in the thirs - too late to do much but rush out and change the batteries. Spent the evening at home cussing at A.R.L.

25 July

Barrow, Alaska

Spent the entire day transecting in good weather. In the morning Dan and I went to Wohlberg Slough and area south. Some difficulty caused by lack of agreement between the map and the course of the slough, but nothing serious.



Mackean  
1967

Journal

25 July] Tide came in while we were south of Wobbelay, raising the water to a dangerous level. Had to go west, across Central Marsh Creek, and in by Micatla. Few birds in the Marsh; a few plovers and red-backs along the ridge & of the fertilized plot.

In the afternoon I finished up transects N & S of So. Meadow Lake and Gasline Ridge. In the evening returned to that area with Dan to complete the transects there. Saw a small flock of melanotos - in ponds & ditches on Gasline Ridge; otherwise, all quiet.

Barrow, Alaska

More good weather to finish up the transects. Dan and I are exhausted and coming down with colds, but the lined - 32 of them - are done. In the morning went to Helmer's Harbor. Lots of alpina and P. leucostis there - feeding along ridge and mesic tundra. In the afternoon - 3 transects in Central Marsh to finish up. Grabbed 16 SOS cores from the Marsh, then collected 4 melanotos from a flock of about 30 feeding along the road. Spent the evening passed out ... however, 22 transect



MacLean  
1967

Journal

26 July] should be plenty.

27 July

Barrow, Alaska

Spent the morning the same place as the evening, then cleaning tanglefoots and blowing my nose. Went out for the tanglefoot change in the afternoon in a cold, persistent rain. There was little on the bars & the rest of the tipulids and some *Brevisetipes*. Came in out of the rain as the cold air fell fast. Spent the evening in bed!

28 July

Barrow, Alaska

Back to counting worms. Spent all morning with Don counting chironomid larvae from the past three before samples. The last one was based - but no tipulids. (Found 6 tipulids that Don missed in the last two samples.) I would like to take periodic samples to weigh to see how  $\bar{w}$  increased.

Spent the afternoon putting up a snowy owl shot by Seaman, with Mary Shickos acting as observer. In the evening played basketball in town.

29 July

Barrow, Alaska

Counted more larvae from the latest sea samples, then hand picked several to determine effectiveness of



Hackett  
1967

Journal

29 July] berlese extraction. It appears to be at least 85% - good enough if it is not for tipulids (Triatominae and Pedicia).

In the afternoon were over into Holmes' Marsh to look around, take feeding observations, etc. Saw a few golden plovers and a red-back with a flying immature; not much else. Went down to Central Marsh to take soil samples. A flock of pectorals and a few immature semi-palms there.

In the evening drove out to Shooting Station. Flock of 12 immature pusillus along the lagoon - ponds behind tents. Encouraging though - these are not too disturbed, and are much like the ponds in the Drum Area that are so heavily utilized in August. Ticked up one of our banded semi-palms - # 75-26632 - that a boy shot from one of the ponds at Birnik, returned to write notes, and then to bin.

Barrow, Alaska

Sunday morning in the rack, then to the lab to clean tanglefoots that I just counted. Out for the change - found a burst of bird activity - red-backs, red-backs, plovers, and the dowitcher

30 July



MacLean  
1967

Journal

30 July] of the session. Took a good number of feeding observations, then cleaned the boats. Afternoon - found 2 puffins; took observations and photographed these, then drove on to site II and were to change there. Again - pectorals and semi-pal in the marsh; red-breasts and plovers on the ridge. Still plenty of insect activity evident on the ridge, although the tanglebeds are still going down.

Spent the evening processing birds with Esra. Stomach collection is up to 30 now.

31 July

Barrow, Alaska

Spent the morning finishing up backlog of birds plus some red-breasts this Tom brought in. After lunch drove to Shooting Station, then up spit toward Nuvuk with Dan, Tom, and Don Kanpas. Large flocks of Sabine gulls and Arctic terns have gathered along the spit. Got good (I hope) pictures of a Sabine gull and an immature kittiwake that, for some reason, refused to fly until actually touched (Dan k. caught it by hand). Collected 1 kittiwake. Many jellyfish were washing through the break in the spit. Kanpas made a plank for haul there - caught



Nacken  
1967

# Journal

Sagitta, small jellyfish, many others.

Went out to shooting station in the evening. Flock of semi-palas is larger now - ca. 22 birds. Lots of ciders flying - just beginning eclipse melt.

August

## Barrow, Alaska

Spent the morning writing many letters, while Tom and Don lost a bogey on the wedgetail and walked in from Elson Lagoon. After lunch talked with MCB about getting Don out to see some of the other sites. He reacted well - we'll start with Don and Tom to Meade River, then probably Don and I to Umiat. Cape Thompson will be last on the tour, if it works out.

Went out to drum area paws with Dan to collect large red chironomids and talk about the tundra tour, then returned to the lab to count. We collected 935 in about 45 minutes. The size distribution makes no sense - certainly no clear age classes. They appeared as large now as late last August. I'll have to repeat at about 1 week intervals.

Spent the evening in town getting waxed at basketball. We should have



Macken  
1967

Journal

stays with softball!

2 August

Bearskin, Alaska

Mutual back-scattering with Brewer - spent the morning touring Dr. Schleser of N.I.H. and Dr. Atkins of Yale University New School. Schleser was involved in the N.I.H. sponsorship of the recent meeting in Fairbanks - hence the special treatment. Typical bird-watchers. ~~After~~ Warm day with South-wining, but few birds on the uplands. Flowers scattered; large flock of ptarmigan in the marsh. Delivered the bird-watchers to Birnirk after lunch to watch tigers, and returned for tanglefoot change. Quick change at site B, then to II where we tried vacuuming fixed areas for spiders, carabids, etc. Set some more can traps and took 8 500 cores by central Marsh tanglefoot and emergence traps. E more from Beach Ridge crossing. Just beyond, track slipped off of ridge which will be walked in.

Spent the evening helping my gear and passing gear, then walked outside shooting station. Several turnstones as well as semi-palmarin-bills



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there. Sabine gulls are hunting all along the coast. The south winds finally blow the ice completely over - only islands now. The winds also brought in mosquitoes abundantly. Many other non-migrants were conspicuous.

Bew's juvenile (but flying well) grey-cheeked thrush in the Drum area as we were walking in.

3 August

Bearskin, Alaska

Don and Tom finally off for the Meade in the afternoon after being held up by dense fog all morning. Waited with them for a while, then went out to collect birds. Couldn't get close to dam places. Finally has cassette for 2 midwives from flock by corner of Central Plaza - birth #4, #1791 & 792. Spent part of afternoon trying to sleep off rotten stomach, then went to lab and worked on birds and refs while laundry was washing.

In the evening nobody came to pick us up to go to town, so we drove out to Shooting Station. Was in the tent and finally finished my darn notes! Lots of red-backs - a flock of about 30 -



Mackea  
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plus ca. 20 semi-pal's. The droppings are beginning to pile up - 40 to 50 of them, spread out on all of the grass.

The 500 samples taken last time (6 days ago) are still producing, thus means many samples were discarded too soon. These have produced >30 Pedicia, and 4 Prionocera larvae. The last batch produces no tipulids but many chironomids, in an area showing signs of old disturbance. May be mutual exclusion operating.

4 August

Barrow, Alaska

Put new batch of 500 cores in the funnels, then spent most of the morning tramps picking the central marsh batch. Found 4 additional larvae - Berkeley's extractor  $\frac{1}{2}$ , or 80%. Watched carefully for small larvae, but still found none. There may be an obligate diapause in the egg stage, so that this year's eggs have not yet hatched.

After lunch drove Charlie over to Shooting Station, then returned to write abstract for Alaska AAAS meeting. Gas began acting up worse than ever - spent the evening trying to clear out the damn gas.



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5 August

Barrow, Alaska

Measured Pedicia from Barlise funnels - all above 14-17 mm range, and a goodly number of them. Then began counting tanglefoot boards. Interrupted to pour over a letter to Pitelka, then finished counting and cleaning after lunch. Went out with Ezra and Bobby. Found flock of ca. 40 pusillus, 10 melanotos, and 10 alpina - all feeding around ponds East of road, by reedbed row. Collected wildly: 5 pusillus, 2 melanotos, 2 alpina - and took feeding observations, then drove on to Tanglefoot I. Made change, then went after feeding flock of ca. 18 alpina and 4 Pt. dominica. Took obs, then collected 2 alpina and 1 plover. Drove around to site II; large flock of ca. 80 semi-pals was strung out along the weasel road. All in all, the place is full of semi-pals!

Changed tanglefoot II boards. Then drove to Shooting Station for caribou dinner. Returned and spoke with Brewer, then spent the evening in the lab washing a yellow-billed loon picked up at shooting station and cutting



Mackeson  
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Journal

up shorebirds collected today.

6 August

Barrow to Umiar, Alaska

Spent the morning counting yesterday's tanglefoot boards, with Don helping. We are still getting the small tipulid-like beast, but no more of the 3 major tipulid species. Biomass is conspicuously down.

After lunch Don and I were rushed over to the airport for a flight to Umiar, then stood around and waited for a wheel to be changed on the plane. Finally took off with Joe Felsner flying and Dr. Kobayashi (Japanese mycologist) as 4<sup>th</sup> person in the plane. Flew quite high - as is usual with Felsner - so we couldn't see much.

Arrived at Umiar to find Clayton White and Dr. Spofford - of Tom Cade's river-cruising falcon watchers - there.

Don and I went immediately into willow scrub east of runway - saw and heard many willow warblers



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9 August

Barrow, Alaska

Back to work and Barrow weather - heavy snow early, then alternate snow and light rain most of the day. It cleared up in the late afternoon, and the evening was clear and cold ( $32^{\circ}$  +).

Cleaned the lab of pre- and post-Union messes, then spoke with Brewer re. Cape Thompson. Dan is on for a second flight today, with Tom along as ballast. It is a bit frustrating to arrange these good trips for Tom without his putting one at all in return (which he absolutely has not!) - but such is life.

In the afternoon had to rewrite the abstract for my Alaska AAAS talk, since I can't find the one I wrote earlier, darnit, then drove over to shooting station to check things there and pick up Merle's gas cans to fill for a trip to the Point this evening.

Neither the trip to Thompson nor to the Point materialized. Bad weather at Thompson, seal hunting at Barrow.

Drove over to shooting station with Ewan & Warren Fox - an engineer here to look at how ducks appear as radar images. Left passengers, then headed for Haines'



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[9 August] Maxess. Found a flock of >100 alpine feeding around coastal ponds; ca. 30 pusillus and 5 turnstones there also, w/ ca. 50 phalaropes - almost all immature.

Drove to polygon area S. of Crooking Station and took 8 SOS cores from polygon trough system, then drove to Central Marsh for 8 more. Cobs on the lenses! Flock of ca. 25 pusillus, on weasel road - otherwise, all birds were coastal. Saw no predators, but didn't look too far into the marsh. Similarly, no plovers, although Maria reported a flock of them by the bridge near Birnik.

Saw a red fox right near Town Hall. It wasn't at all impressed by the weasel - just slowly loped away.

Returned to the tent and warmed up, then returned to put SOS samples in funnels (one big Priocnemis right away from the marsh), then home to write notes until very late.

Barrow, Alaska

Snow in the morning again. Finished up notes and copies feeding observations, then measured larvae from berdxases: 7 P. hawaii from the troughs; 4 P. hawaii and 4 Priocnemis (big ones) from the marsh.

10 August



MacLean  
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No little Prionocera yet - there is still the possibility that the little ones we are getting hatch out in the funnel with the sudden heat shock (nearly 40° F. at least - to room temperature).

Autopsies alpina killed yesterday, then waited for Kenny Tuck to leave for the Point in the arctic LST Liz Maru. Finally departed about 3:00 P.M. Watched for guillemots on the way up, but saw only old squaws, a few eiders, and nothing else. Glance at gulls. Land at the point and hurried to check drums for possible guillemot nest. First drum checked has fox tracks and remains of a recently eaten Arctic tern. One other drum has an empty snow-bunting nest, but no guillemots. Drums were surrounded by both fox and human tracks - too much disturbance, I fear.

Lots of Phalaropes - 25<sup>th</sup> immatures: 1 adult - along the coastline. Nunavut tundra has a few semi-palts along coastal-type ponds and snowy outfls!

Returned quickly for dinner. Spent the evening at our base with Dr. Stoss, Don Karyas, and Don Becker discussing major problems of the north over a



MacLean  
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[10 August] case of beer. - boss and I decided to look at the possibility of using hospital records from native service hospitals at increasing latitudes to see if periodicity of human birth increases with increasing magnitude of photoperiodic change. Just in Alaska we would use Mt. Edgecumbe, Bethel, and Barrow, with maybe some Indian hospitals from the South 48 thrown in.

11 August

Barrow, Alaska

Up early, under protest. Measured 1 more Pavonia lanata from Barleyfield - then B.S.'s with Dan Beeson until his departure for the South 48. Wrote more notes to bring species accounts up to date. In fact, I am even caught up with copying feeding observations! Next prepared tanglefoot boards for afternoon change, and after lunch went out to do so. About 30 alpina and 40 pusillus by reeler row ponos. Collected 1 alpina - SII 809. Almost no shorebirds beyond. Central Marsh was empty. Heard 2 melanotos fly over - no other pectorals. Saw 2 alpina, and finally a flock of ca. 18 pusillus on the wessel road. No plovers or dowitchers seen or heard.

Changed boards on site I and brought



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11 August]

in emergence traps. Although the numbers inside I and our did not show differences, the vegetation was definitely taller and greener inside the traps. Went on to site II; changed the boards and emptied the can traps, then set 12 more cans to complete the X and bring the total to 25. Cans emptied contained 19 tenthredinid larvae: 10, 8, 9, 11, 19, 14, 15, 9 mm. Picked up the emergence traps there, as well. Dropped them on the way in, breaking 2. No matter - they should be modified to make them easier to check, anyway. Drove in as snow was flying. Temperature never rose much above 35° all day.

Spent the evening in town playing basketball. We finally won - barely - over the oil grocers!

12 August

Barrow, Alaska

Counted material under berlese funnels, then devoted some thought to quantitative insect sampling next year. Came up with two reasonable ideas:

1 - To relate the tanglefoots to actual numbers - change the boards some afternoon and then, at 3 hour intervals for 24 hours, run tipulid transects. After 24 hours collect and



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[2 August] count the tanglefoot boards. If we use 28 established transects with the habitats already characterized we can do enough to get a good idea of actual tipulid density. Repeat several times, hopefully, at low, intermediate, and high tipulid densities.

2 - Use emergence traps as exclosures. Have more built - and place 1/2 out as soon as desired areas are free of snow, then the remaining 1/2 in comparable locations on the day that the first adult tipulid is seen. The difference between the two sets should represent larvae saved from predation by exclusion of shorebirds. (But only if larval competition is not limiting. If two sets  $\rightarrow$  = numbers, we must conclude that shorebirds are not influencing number of adult insects which emerge.) It's worth a try.

Next processed yesterday's bird kill, then drove out to Shooting Station to think about sampling larvae in coastal ponds. Pond margins consist of about 1 to 4 cm. of organic muck lying over gravel. Larvae are confined



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[2 August] to the muck. Collected 2 ~~8~~ cores to try several extraction techniques. Saw and collected an immature Stilt Sandpiper from one of these ponds, as well as 1 alpina and 1 pusilla. Ponds has many phalaropes; fewer pusilla, still fewer alpina and C. interpres. Went to Dr. W. Smith's house for crab and spaghetti dinner, but left party early to go to lab. Processed today's specimens, then went out to collect soil samples of mesic tundra for berlese extraction. For the first time this year tundra has a frozen surface which cracked under foot. Took 8 cores from area West of Micro Mts., 8 from Beach Ridge, North slope, East of Micro Mts. Retuned, placed these into funnels, then home to bed.

3 August

Barrow, Alaska

Spent the morning and early afternoon hand-picking all 16 blasted soil cores from last polygon trough and central marsh collection. Trough sample berlese removed 3/16, or 93%. Not so good in the marsh:  $\frac{1}{4}$  Fuscia over 10 mm, or 79%. Still acceptable, we think.

Next tries hand picking, washing,



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[13 August] filtering, etc. was sample from  
Shooting Station. Nothing seemed to  
work, so I hand-picked one of the  
mesic soil samples with kale (*P. Persicaria*).  
Then placed a pond margin sample in the  
vacated tunnel. Home for dinner and  
the movie with Bobby and kale, then  
wrote notes and a letter.

14 August

Barrow, Alaska

Ordered 10 new emergence traps  
to make a total of 16 - 8 pairs.  
Changed the design to make them  
easier to check - they will be truncated  
pyramids - a 36" square bottom frame  
(to make them comparable to the old  
ones) and an 18" square top frame,  
connected by 20" pieces on the corners.



Netting will be firmly  
attached to all sides,  
removable at the top for checking  
and removing insects.

Removed and measured larvae from  
berleseos. The mesic tundra samples are  
producing mostly *Persicaria* - only 1 large  
tipule.

After lunch went out with Tom and  
walked over T's Plot and Holmes' Marsh  
while he set traplines III & VII. Saw



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[16 August]

many phalaropes and only 1 immature alpina in the Marass, then found a flock of 45 alpina, mostly adult but w/ about 8 immatures, feeding in ponds at mouth of Heddlyn's River, with another 10 or so up on tundra to the N.E. Birds in the ponds (which is disturbed) were feeding more actively than birds on tundra. Retuned to the marsh for the shot gun. When I returned to the area only a 18 birds were feeding in the ponds - the others had moved on to the tundra. Collected 5 (see esp. accou). Also collected some phalaropes for Don Kangas, then returned to the lab.

Tom Case and John Haugh have returned from Ocean Point on the Colville. Put up Stilt Sandpiper, then B.S.'s with them over in the Vinnell coffee shop. On the way back to the lab saw that Clayton White, Gordon MacLean, and the Spoffords has returned from Umiar. Spoke with them, then drank a beer and discussed the meaning of "community" with Ray Stross until the late hours.



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15 August

Barrow, Alaska

Slept in, then to the lab to discover that the flood in Fairbanks has reached the air port, so no flights out for a while. Case's people have our back labs in a mess. Awoke this morning counting tanglefoots, then went inland with MacLean, 2 Spoffords, & John Haugh. Pectorals, which were non-existent yesterday, were common today. (Not just here - Tom saw them in Central Marsh.)

Dowitchers were also seen. Drove to Ikravik to see about Holmes' claim of adult alpine inland - tipula feeding v. juv. alpine coastal - chironomus feeding separation. Did see alpine inland - 1 flock of 20 feeding on low polygon area, others at pond edges, but I still think Holmes overstates the separation. Lots of phalaropes; no jaegers or owls. I was struck by the amount of green remaining in the tundra as we enter the last half of August.

Walked into town after dinner to play basketball, then returned and drove out to shooting station with Gordon MacLean. It proved to be far north



MacLean  
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15 August] to see ducks well, but we had an interesting discussion concerning aparthid while we watched. Went in for tea and cake, then returned ca. midnight.

16 August

Barrow, Alaska

Spent the morning working on specimens and notes and talking with the River crew. After lunch skinned a Gavia arctica picked up at duck camp. Then went out for 800 samples with Clayton and Gordon. Weather was around freezing, with a strong East wind. Took 8 cores from Beach Ridge just west of Gasline road, 8 more from Voth Area, N and W of crossing of Family Creek. Drove across the creek to look for birds. Saw a few Dowitchers, scattered pectorals, and a flock of ca. 30 alpina. Collected 1 melanotos and 1 alpina. Also saw a few pusilla feeding in bare boughs. Returned - put 800 samples in cores - then spent the evening drinking beer, eating dinner, and conversing with Clayton and Gordon. My wife's comment: "How can some guys be so engrossed by birds?!"



Nacken  
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Journal

17 August

Barrow, Alaska

A sudden peculiar switch in the weather - the temperature was above 60° F. today! with mild winds. We worked in shirt sleeves.

Spent the morning finishing up the boat and yesterday's specimens. Just after lunch the Wien finally got a plane out of Fairbanks, and the base crew departed en masse, leaving our lab looking not unlike Fairbanks after their disaster. Counter and cleaned the remaining tanglejacks, then went out with Tom. Changed Tanglejack I, dropped him at lines III & IV, got to pick these up, changed site II, then walked to large enclosure at North end of P's Plot to repair that (as requested in a letter from P.) And that was the afternoon.

Home for dinner, then lay down for a while. Woke up at 4:30 AM.

18 August

Barrow, Alaska

got up early! Tom took the wedel out to check traps, so I spent the morning cleaning up the mess in the lab and writing notes to get caught up again, then picked 8 of the mesic fauna samples from Berlese funnels. Found a



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[18 August] great big live tipula larva - so the berlese method won't work on mosc. son.  
No Pedicia, tho.

After lunch were out with Tom to Voth Area to look at birds while he set traps at A-B. More unusually warm weather in the morning, but it quickly clouds up and rains quite hard. Many birds - a flock of a. 35 alpine near the lines, plovers scattered about, several groups of dowitchers and pectorals, and still many longspurs. Collected 2 alpine, 1 melanotos, 1 P.d., and a series of feeding observations before the rain really hit. Helped Tom set out the lines, then came in and processed the birds.

Took a big wooden box to the bar and began setup and packing our things in the evening as the weather improved again.

(19 August)

Barrow, Alaska

More packing in the morning. After an early lunch started walking inland to Micro-Bar, then Goshine Ridge, then Village Ridge, then Browerville Ridge to Browerville. I think I saw more birds today than any day this year. Many alpine, plovers, and dowitchers; pectorals were frequent; a flock of pusilla by a pond in the



MacLean  
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19 August] Drum area; was still longspurs. (I'm having Tom save longspur stomachs from the 3<sup>rd</sup> run of the trapline to see what they are getting.... if I can find the time to look at them.) Saw 1 flock of only immature alpine, supporting Holmes. Many of the birds, especially plowers, were feeding on upland tundra. Dowitchers were all in mossy pond bottoms.

Went shopping in town for fur for our new jackets, then caught a ride back to camp. Spent evening writing notes and visiting with Emily and John Hutchinson.

20 August

Barrow, Alaska

Warm, but foggy today. In the morning took a live alpine out into the drum area and placed him in an emergence trap as a holding cage. May be he can do some of his own feeding. Processed birds from the traplines, ordered a carrying box for Tom to use in taking tissue material to Berkeley, then cleaned the lab and wrote notes. Rain began to fall so we delayed going out to bring in lines I & II. I packed up 3 boxes of books and measured 5 small tipulid larvae from the Berlesees. Again-these were a few mm larger than those that



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[20 August] came out early in the sun; they may be growing rapidly under the sudden increase in temperature before falling out.

Counted our shotgun shells - we're nearly out of small stuff, and we are home for late lunch, followed immediately by early dinner at Fidlers. Joe is just back from Fairbanks - reports that things are still a mess there. Boats in downtown area. the Science conference will almost surely be cancelled or moved.

Took Edna out to FAH area and walked pony-studded area S. of South Salt Lagoon. Still many birds - Dowitchers abundant, two here to approach. Finally took 1 from a flock flying by; melanotos abundant; phalaropes very thick; plenty of alpins and tundras. Also took 2 picards and an immature rumpkin. Came in when it began to be too dark to see - only one foggy evening as tonight. Drove to Birknich to drop off Edna, then to lab to check on live birds and weigh tonights kill. Home for watermelon and fieldnotes.



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21 August

Barrow, Alaska

Early start to process yesterday's birds, then drove over to lines III A-B & IV A-B with Tom. Still many birds in the area - plovers on dry ground, pectorals and dowitchers in ponds, alpines in both. Drove in and spent the rest of the morning banding sand samples, processing a trapline P.d., and miscellaneous odd jobs.

After lunch took the wedges out toward P's plot. A flock of 12 dowitchers and a few pusilla in ponds south of Milkpuk. P.d. and a flock of as + immatures alpine on dry ground of Beach Ridge. Dowitchers and pectorals in Holmes' Mounds and flying over Central Marsh. Walked out into the marsh - found about 1 pectoral / acre, fewer dowitchers. Pectorals were very active, probably preparing to get the flock out of here. Seem to be more owls in the area again. That's all.

Returned to lab and processed 2 dowitchers collected this afternoon, then home for dinner and an evening of relaxing and writing notes. The never-ending task.

Weather cleared and turned hot



MacLean  
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again warm. It seems that birds have been piling up with the warm weather. The sudden onset of cold weather may cause a mass exodus at the end of the season.

22 August

Barrow, Alaska

And then there was one. Tom Custer finishes the third run of the lemming trapline (very few animals caught) and departs for California tonight. He took with him the frozen tissue samples that we have been saving for the Wilson biochemical taxonomy study.

Spent the morning in the lab, since Tom needed the weekend to bring in traps. He didn't get up until 10:30, and then just sat around! Worked on notes, bird-picking too... went to trans-fer my alpine and found chironomid larvae on his bill.

After lunch drove over Gaswell Road to take soil samples and see what was in the area. Watched a flock of ca. 30 snow buntings go by. Much interaction amongst the birds. They worked along the ground - birds moving 50-100 m. and jump.

Took 8 cores from low-polygon troughs on either side of the road near



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22 August]

Beech Ridge, then drove on to trapline II-A-B. to take pond-edge samples. A very thick ground fog suddenly dissipated, leaving a warm clear day. Spent the rest of the afternoon in shirt sleeves. An amazing afternoon it was. Birds at tremendous densities - plovers and sandpipers feeding on uplands and low polygans, lots of dowitchers and some pictorial circums ponds. Collected 29 feeding observations in just over 2 hours. The warm weather brought many adult insects out. Collected some alpine to see if they might be taking these. Also collected a dowitcher and a plover. Has to come in to process specimens and freeze tissue before tom's departure.

Has a beer prior to in Stross' lab, then home for dinner late, and writes before bed.

23 August

Barrow, Alaska  
Warm again.



Machean  
1967

Journal

25 August

Barrow, Alaska

Another day working at the soos. In the morning drove over to the area near Lewellyn's voth area set up - South of Family Lagoon creek and East of the gasoline road - in elevated, dry tundra. Hans sorted 5 soos samples on the spot: (f-w-3/0-A) - #1 - removed 1 large tipula larva and 1 Pedicia - 12mm. Found nothing in the next four cores. took 5 more to put in Berlese's for comparison. Drove in - saw a small flock (ca. 10) melanotos in very tall grass W. of road, in pans created by the road. Collected 1 of these.

After lunch returned to the voth area and continued on to the gasoline just West of Gasline Ridge. took 8 samples, then wandered up to the top of gasoline ridge to sample and Hans - sort there. In the first sample (f-d-2/1-A- $\frac{3}{3}$ ) found 3 tipula larvae - all 20 mm. Found only 1 other larva in the next 7 samples - all carefully Hans-sorted.

In the evening Hans-sorted the 8 samples taken from Ip tundra by the gasoline and found not a thing!



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Discouraged, went into town to play basketball.  
More discouraged, came home to write  
notes and go to bed.

26 August

Barrow, Alaska

Max introduced me to John Teasrow (soils -  
Rutgers) and his associate - Dr.



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Journal

29 August

University of Alaska, College, Alaska

Up for a refugee soup-line breakfast at the Univ. Commons, then walked up to the Institute of Arctic Biology building. Spoke with Dr. West about the conference and things I want to do in his lab, then went to work. I want to do:

1 - fat extraction on birds

2 - dry and weigh *tipulid* larvae separated by size classes to generate a length-weight regression.

3 - fatty acid comparisons of birds (just 1 plover and 1 pectoral with large fat pads on pectoral muscle) with prey species. This will require extraction of prey as well - all 3 sp. of larvae and *Tipula* and *Pedicia* adults. In order to do this the prey must be freeze dried rather than oven dried. Martha Meng is still working as Dr. West's technician and will assist in this.

4. Dry and weigh other insects.

Started by spending the morning, with Eona, plucking 2 young plovers. Of 1 of these cut up and into the oven (SII 753).

[6.8690 g.] took a little subcutaneous fat from the other (SII 751) and began preparation for



Macken  
1967

# Journal

29 August] Chromatography of fatty acids, which will be done tomorrow.

Registered for the conference, then walked down to College Inn grocery store for some food. Returned for a nap, then up to the lab to separate and count the tipulid larvae and prepare them for the drier. Cut up the other plover and put it into the oven, then quit to go eat.

Just for laughs, we weighed the feathers removed from the plovers. SN 81 = 13.75g; SN 753 : 11.83g.

After dinner at the commons we went to the opening session of the Conference - late enough to miss the speeches, but in time to see Dr. W. Sladen's (John's Hopkins Univ.) films of Adelie Penguins.



S. MacLean

1967

feeding observation tables



Mackean  
1967

Flaming Observation

5 June

Bear Creek

001 ♂ a 13 f - w - 7l - A - 3l - C white with  
002 ♀ x 14 m - w - 7l - A - 3l - C yellowish  
003 ♀ x 14 m - w - 7l - A - 3l - C, rump black  
004 ♀ x 14 m - w - 7l - A - 3l - C  
005 ♂ a 14 m - x - 7l - A - 3l - C, tail  
006 ♂ a 14 m - w - 7l - A - 3l - C, pink  
m - w - 7l - A - 3l - C  
f - w - 7l - A - 3l - C pink  
along snow edge.

007 x 14 f - w - 7l - A - 3l - C pink  
008 x 14 m - w - 7l - A - 3l - C pink  
long white tip  
009 a 14 m - w - 7l - A - 3l - C  
010 x 14 f - w - 7l - A - 3l - C pink  
011 ♂ a 15 f - w - 7l - A - 3l - C

7 June

Nuvuk

012 m II f - w - 7l - A - 3l - C, white  
tail white  
013 b II f - w - 7l - A - 3l - C  
014 m II f - w - 7l - A - 3l - C  
015 b II f - w - 7l - A - 3l - C  
016 Caliba 12 f - w - 7l - A - 3l - C pink-white  
017 ♂ m 12 f - w - 7l - A - 3l - C  
018 Caliba 12 f - w - 7l - A - 3l - C pink-white

8 June

W. Branch Ridge

019 ♀ m 14 f - w - 7l - A - 3l - C pink-white  
020 ♂ m 16 f - w - 7l - A - 3l - C



Macklin  
1967

8 June 1967

[8 June]

021 m 16 f-w-11-A-11c  
022 ... 16 f-w-11-A-11c  
023 F m 16 f-w-11-A-11c plus 11d  
024 ♀ m 16 m-w-11-A-11c  
025 Calbu 16 m-w-11-A-11c collector

9 June

Beach Ridge

026 F m 10 m-w-11-A-11c pb.  
027 ♀ m 10 f-sat-11-A-11c jb  
028 ♂ m 10 f-sat-11-A-11c jb  
removes tipulid larva.  
029 ♂ m 10 f-w-11-A-11c jb  
030 F m 10 f-sat-11-A-11c  
031 ♂ a 10 f-w-11-A-11c jb along  
snow edge.  
032 ♂ m 10 f-w-11-A-11c jb along  
recently exposed ground.  
033 Pid. 10 f-w-11-A-11c  
034 ♂ m 10 f-w-11-A-11c jb near  
snow line. ate tipulid larva.  
035 F m 10 f-sat-11-A-11c jb along  
snow edge.  
036 ♂ m 10 f-w-11-A-11c jb.  
along snow edge. (bottom frozen  
or 1 cm).  
037 ♀ a 11 m-w-11-A-11c jb  
f-w-11-A-11c  
038 ♂ a 11 sp-d-11-A-11c



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1967

Foxwing Observations

[9 June] 039 ♀ a II rp-d- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab

Drum Area

040 P... 15 pe-pw- $\frac{1}{2}$ o-B- $\frac{1}{2}$ o-Co  
041 P 15 pe-pw- $\frac{1}{2}$ o-B- $\frac{1}{2}$ o-Co  
042 P 15 pe-sae- $\frac{1}{2}$ o-B- $\frac{1}{2}$ o-Co jab  
043 P 16 pe-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab

10 June Voth Area

044 ♂PF 15 pe-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co peak  
pe-pw- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co peak  
045 PF 15 pe-pw- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co peak  
046 ♂PF 15 pe-pw- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co  
047 PF 15 pe-pw- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co  
048 ♂m 15 lp-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co probe  
049 PF 15 pe-pw- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co  
050 ♂m 16 pe-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co  
051 P 16 pe-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co peak  
052 ♂m 16 pe-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab  
053 a 16 lp-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co  
054 PF 16 pe-pw- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co  
055 a 16 lp-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab  
056 ♂PF 16 pe-pw- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co peak

12 June Voth Are

057 ♀ m 14 lp-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab  
lp-sae- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab

Rapid Series

058 ♀ m 14 lp-w- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab  
lp-w- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab  
rp-w- $\frac{1}{2}$ o-A- $\frac{1}{2}$ o-Co jab



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## Feeding Observations

[12 June] 059	♂ m	15	$\ell_p - w - \frac{4}{10} - A - \frac{3}{10} - C_o$ jab
060	♀ m	15	$\ell_p - w - \frac{1}{10} - A - \frac{3}{10} - C_o$ jab along snow edge.
061	Pd	15	$r_p - w - \frac{3}{10} - A - \frac{3}{10} - C_o$
062	♂ m	15	$\ell_p - w - \frac{4}{10} - A - \frac{3}{10} - C_o$ jab. successful.
063	♂ m	15	$\ell_p - w - \frac{3}{10} - A - \frac{2}{10} - C_o$ along snow edge
064	♂ m	15	$t_r - w - \frac{3}{10} - A - \frac{3}{10} - C_o$
065	♂ a	15	$\ell_p - w - \frac{1}{10} - A - \frac{3}{10} - C_o$ jab
13 June			Micro-Met Marsh
066	Pd	11	$f - w - \frac{3}{10} - A - \frac{3}{10} - C_o$ just exposed
067	Pd	11	$f - w - \frac{3}{10} - A - \frac{2}{10} - C_o$
			S. Beach Ridge
068	♂ i	14	$w - w - \frac{3}{10} - A - \frac{3}{10} - C_o$ $c_f - w - \frac{3}{10} - A - \frac{3}{10} - C_o$
069	♀ a	14	$\ell_p - w - \frac{3}{10} - A - \frac{2}{10} - C_o$ jab
070	♂ m	14	$\ell_p - w - \frac{3}{10} - A - \frac{1}{10} - C_o$ jab
071	♂ a	15	$\ell_p - w - \frac{1}{10} - A - \frac{2}{10} - C_o$ jab $p_e - sw - \frac{3}{10} - A - \frac{4}{10} - C_o$ $\ell_p - sw - \frac{1}{10} - A - \frac{1}{10} - C_o$ $\ell_p - w - \frac{3}{10} - A - \frac{1}{10} - C_o$ jab
072	♀ m	15	$f - sw - \frac{2}{10} - A - \frac{3}{10} - C_o$ jab $f - sw - \frac{3}{10} - A - \frac{5}{10} - C_o$ jab
073	♀ Pf.	15	$f - sw - \frac{1}{10} - A - \frac{3}{10} - C_o$ jab into water



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## Feeding Observations

[13 June]	074	♂ PF	15	f - sw - 1/0 - A - 3/0 - Co    jab into water
	075	♀ PF.	15	f - sw - 1/0 - A - 4/0 - Co
	076	♀ m	15	f - sat - 4/0 - A - 3/0 - Co    15 sec. jabs.
	077	Pd	15	f - sw - 2/0 - A - 4/0 - Co
				f - sat - 4/0 - A - 4/0 - Co
	078	di	15	lp - w - 1/0 - A - 0/0 - Co
	079	♂ m	16	m - sat - 3/0 - A - 3/0 - Co    jab
				m - w - 2/1 - A - 2/0 - Co    jab near
				snow edge.
	080	Pd	16	f - w - 1/1 - A - 3/0 - Co
	081	Pd	16	f - w - 2/1 - A - 3/0 - Co
14 June				S. Gasline Ridge
	082	♂ m	10	lp - w - 3/0 - A - 3/0 - Co
	083	♀ a	10	lp - w - 1/0 - A - 3/0 - Co
	084	♂ a	10	lp - w - 3/0 - A - 3/0 - Co    jab singly.
	085	♂ m	11	f - sat - 2/0 - A - 3/0 - Co    jab
	086	♀ m	11	f - w - 3/0 - A - 3/0 - Co
	087	♀ m	11	f - sw - 2/0 - A - 3/0 - Co    jab from group of E.
15 June				Drum Creek
	088	P	14	pc - w - 2/0 - A - 3/0 - Co
	089	b	14	rp - w - 1/1 - B - 1/0 - Co    peck
18 June				N end of Footprint Lake
	090	♂ m	13	f - sat - 2/0 - A - 3/1 - Co
	091	♂ m	13	pc - w - 1/0 - A - 1/0 - Co
	092	♂ m	13	f - sat - 3/0 - A - 4/0 - Co collection 2
	093	Pd	13	f - sat - 2/0 - A - 3/0 - Co



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# Feeding Observations

[18 June]	094	Pd	13	f w 3/0 A 3/0 C <sub>2</sub>	
	095	♀ Pd	13	f w 3/0 A 3/0-C <sub>2</sub> peck	
	096	Ts	14	rp d 1/1 A 2/0-C <sub>0</sub> peck	
				m-d-1/0-A-3/1-C <sub>0</sub>	peck
	097	♂ fm	14	lp-w-3/0 A-3/1-C <sub>2</sub>	jab
	098	♀ m	16	w-w-3/0 A-3/1-C <sub>0</sub>	jab
	099	♂ fm	14	f-w-3/0-N-3/0-C <sub>2</sub>	jab
	100	♂ fm	15	f-w-3/0-A-3/0-C <sub>2</sub> collected	
	101	♂ a	16	f-w-3/0-A-1/1-C <sub>2</sub>	jab
				w-w-3/0-A-3/0-C <sub>1</sub>	
				pe w-3/0 A-3/0-C <sub>2</sub>	
	102	♂ fm	16	f-w-3/0-A-2/0-C <sub>2</sub> gr	probe
	103	♂ fm	16	tr-w-2/0-A-2/0-Gr	jab
	104	♀ m	16	tr-w-2/0-A-3/0-C <sub>0</sub>	
				rp-w-2/0-A-3/0-C <sub>0</sub>	
	105	♀ m	16	lp-l-1/0-A-3/1-C <sub>0</sub>	collected
	106	a	16	lp-d-2/0-A-3/1-C <sub>0</sub>	
	107	a	16	f-w-2/0-A-3/0-C <sub>0</sub>	
				f-w-2/0-A-3/1-C <sub>0</sub>	
	108	♀ m	16	f-w-2/0-A-2/0-C <sub>0</sub>	
	109	T.s.	16	lp-d-2/0-A-3/1-C <sub>0</sub>	peck
	110	Pd	16	f-sdt-2/0-A-3/0-C <sub>0</sub>	
	111	Pd	16	f-sdt-3/0-A-3/0-C <sub>2</sub>	
	113	a	17	pe-pe-2/0-A-3/0-C <sub>0</sub>	
	112	♀ m	17	lp-w-1/0-A-3/0-C <sub>1</sub>	
				tr-sdt-3/0-A-2/0-C <sub>1</sub>	
	114	Pd	18	f-sdt-3/0-A-3/0-C <sub>2</sub>	
				lp-w-2/0-A-3/0-C <sub>0</sub>	



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# Feeding Observations

15 June

## adcs

115 ♂m 15 f - sw - 3lc-A - 4l<sub>1</sub>-C<sub>3</sub> jab + probe  
116 ♂m 15 f - sat - 3lc-A - 4l<sub>1</sub>-C<sub>2</sub> jab  
117 Pd 15 f - sat - 3lc-A - 4l<sub>1</sub>-C<sub>0</sub> peck  
118 ♀a 15 pe - sat - 1lc-A - 2lc-C<sub>0</sub> jab - rapid

series.

21 June

## adcs

119 ♂m 10 f - sat - 3lc-A - 9lc-C<sub>3</sub> collected  
3 of flock at 10.  
120 ♂m 10 fp - w - 3lc-A - 2l<sub>1</sub>-C<sub>2</sub> collected.  
121 T.S. 16 fp - w - 3lc-A - 3l<sub>1</sub>-C<sub>2</sub> peck  
122 T.S. 16 fp - w - 3lc-A - 4l<sub>1</sub>-C<sub>2</sub> peck  
123 T.S. 10 fp - w - 1lc-A - 2l<sub>1</sub>-C<sub>1</sub> peck  
124 T.S. 16 fp - w - 3lc-A - 3l<sub>1</sub>-C<sub>2</sub> peck

## Central Marsh

125 m 20 f - sw - 3lc-A - 4l<sub>1</sub>-C<sub>0</sub>  
126 ♂m 20 f - sat - 4lc-A - 4l<sub>1</sub>-C<sub>0</sub> probe  
127 ♂m 20 f - sw - 3lc-A - 4l<sub>1</sub>-C<sub>0</sub> probe  
128 ♂m 20 f - sw - 3lc-A - 3l<sub>1</sub>-C<sub>0</sub> probe  
129 m 20 f - sat - 3lc-A - 4l<sub>1</sub>-C<sub>0</sub> probe

## Micro Atter

130 m 21 f - w - 3lc-A - 3l<sub>1</sub>-C<sub>0</sub> (flock)  
131 Pd 22 tr - sat - 3lc-A - 3l<sub>2</sub>-C<sub>2</sub>

23 June

## Drum Area

132 P 10 pe - sat - 1lc-A - 0lc-C<sub>2</sub>  
133 ♀P 10 pe - sat - 1lc-A - 3lc-C<sub>0</sub> peck  
134 T.S. 10 m - d - 1l<sub>2</sub>-A - 2l<sub>1</sub>-C<sub>0</sub>  
135 ♀Pd 11 f - sat - 3lc-A - 4l<sub>1</sub>-C<sub>2</sub>



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# Feeding Observations

23 June]	135	(conv) ♀ Pd	11	f-sar - 3/0-A-2½-C <sub>3</sub>	peck
	136	♂ Pd	11	tr-sar - 3/0-A-2½-C <sub>3</sub>	
	137	♂ fm	11	f-sar - 3/0-A-2½-C <sub>3</sub>	
	138	P	11	pe-sar - 3/0-A-2½-C <sub>3</sub>	
	139	Pd	15	tr-sar - 3/0-A-2½-C <sub>3</sub>	
	140	♂ fm	17	f-sar - 3/0-A-2½-C <sub>3</sub>	probe, jab.
	141	Qi	17	f-w - 3/1-A-3/1-C <sub>2</sub>	
	142	Qi	17	xP-w - 1/0-A-2½-C <sub>2</sub>	peck
				xP-w - 1/0-A-2½-C <sub>2</sub>	peck
	143	b	17	f-d - 1/1-A-3/1-C <sub>2</sub>	jab
				f-d - 1/1-A-3/1-C <sub>2</sub>	jab
				f-d - 1/1-A-3/1-C <sub>2</sub>	jab

continues for 25 minutes.

24 June

## Micro Max

144	a	14	pe-sar - 4/0-A-3/0-C <sub>0</sub>	
145	♂ fm	15	f-w - 4/0-A-3/1-C <sub>1</sub>	collected
146	♂ fm	15	w-w - 3/0-A-3/1-C <sub>2</sub>	collected
147	♂ fm	15	f-sar - 4/0-A-3/1-C <sub>2</sub>	
148	♂ fm	15	f-sar - 3/0-A-3/1-C <sub>2</sub>	
149	Pd	15	f-sar - 3/0-A-3/0-C <sub>0</sub>	just exposed. Islands of sar in sw.

150	♂ fm	15	pe-sar - 4/0-A-3/0-C <sub>0</sub>	
151	Pd	15	f-sar - 4/0-A-3/0-C <sub>0</sub>	
152	a	16	f-sar - 4/0-A-3/1-C <sub>2</sub>	

25 June

## Adcs

153	P	10	pe-sar - 4/0-A-3/1-C <sub>2</sub>	peck into litter
154	Pd	10	f-sar - 3/0-A-3/1-C <sub>2</sub>	



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# Feeding Observations

26 June

155	a	00	F-w-3/0-A-3/1-C <sub>1</sub>
156	a	03	F-w-3/0-A-3/1-C <sub>1</sub>
157	b	10	m-w-3/0-A-4/2-C <sub>2</sub>
158	b	10	xp-w-3/0-A-4/1-C <sub>2</sub> jab
159	b	10	xp-d-3/0-A-3/1-C <sub>1</sub>
			xp-w-3/0-A-4/2-C <sub>2</sub> jab, probe
160	b	10	xp-w-3/0-A-3/1-C <sub>3</sub> jab, probe
			xp-w-3/0-A-3/2-C <sub>3</sub> jab, probe
161	p	16	po-pw-1/0-B-3/2-C <sub>2</sub> peck - ad. diptera on water surface.

28 June

162	b	03	xp-w-3/0-B-3/1-C <sub>1</sub>
163	Pf.	20	po-pw-3/0-A-4/2-C <sub>2</sub> collector 2.
164	Pd	21	F-saw-3/0-A-3/2-C <sub>2</sub>
			F-saw-3/0-A-3/2-C <sub>2</sub>
165	Pd	21	F-saw-3/0-A-4/1-C <sub>1</sub> collector.
166	Pd	21	F-saw-3/0-A-4/1-C <sub>2</sub>

29 June

167	p	03	po-pw-0/0-B-0/0-C <sub>0</sub> jab into bottom- head immersed
168	p	03	po-pw-0/0-B-0/0-C <sub>0</sub> jab into bottom- head immersed
169	Pa	15	m-w-3/0-A-4/2-C <sub>1</sub> jab
170	Pa	15	m-d-3/1-A-4/2-C <sub>0</sub> peck, jab
171	Pd	15	F-saw-3/0-A-3/1-C <sub>1</sub>
172	Pd	15	F-saw-3/0-A-3/1-C <sub>1</sub>



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Feeding observations

2 June	173	Pd	15	f-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C, pick water in marsh
	174	Pd	15	f-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C
	175	Pd	15	f-w- $\frac{1}{2}$ A- $\frac{1}{2}$ C
	176	Pd	15	f-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C, walked
3 July				Central Marsh
	[sic] 176	♂m	15	pe-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C probe
	177	P	15	pe-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C
	178	F a	15	pe-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C
	179	a	15	f-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C juv.
	180	Pd	16	f-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C
4 July				Microtines
	181	Pf	10	pe-pw- $\frac{1}{2}$ A- $\frac{1}{2}$ C, jab into water
	182	a	11	pe-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C jab
6 July				Pb, Pbot
	183	a	05	f-d- $\frac{1}{2}$ A- $\frac{1}{2}$ C
	184	b	05	m-d- $\frac{1}{2}$ A- $\frac{1}{2}$ C
14 July				
	185	a	19	f-w- $\frac{1}{2}$ A- $\frac{1}{2}$ C in flock of P.d., a.m., Cii
15 July				
	186	P	17	pe-sw- $\frac{1}{2}$ A- $\frac{1}{2}$ C peck adult w/ 4 juvs.
	187	a	20	f-w- $\frac{1}{2}$ A- $\frac{1}{2}$ C peck in flock
	188	a	20	m-d- $\frac{1}{2}$ A- $\frac{1}{2}$ C
	189	a	20	f-w- $\frac{1}{2}$ A- $\frac{1}{2}$ C
	190	Pd	20	f-w- $\frac{1}{2}$ A- $\frac{1}{2}$ C peck



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### Feeding Observations

15 July]	191	♂m	20	f(d) - sat - 0/0-B-0/0-Ca	probe
	192	♂f m	20	f - w - 3/0-A-4/4-Ca	peck
	193	♂f m	20	f - w - 3/1-A-4/4-Ca	peck

17 July Beach Ridge

194	a	13	f - w - 3/1-A-5/4-Ca	peck
195	a	13	w - w - 2/1-A-5/4-Ca	
196	m	13	f sat - 3/1-A-5/4-Ca	peck, visual
197	f m	13	f - sw - 3/0-A-4/3-Ca	peck
			pe - sw - 1/0-A-4/3-Ca	peck
			f - sw - 2/0-A-3/3-Ca	peck

[*Eudocia axillaris* intervening area]

### Central Marsh

198	m	14	f - sw - 2/0-A-5/5-Ca	probe
199	m	14	f - sat - 2/0-A-5/4-Ca	peck
200	Pf.	14	f - sw - 2/0-A-4/4-Ca	peck
201	m	14	f - sw - 1/0-A-4/4-Ca	
202	a	14	pe(d) - sw - 1/1-B-3/2-Ca	peck
203	m	14	f - w - 2/1-A-4/3-Ca	peck
204	Pf	15	pe(d) - sat - 0/0-B-0/0-Ca	peck
205	Kusc.	16	pe - pw - 0/0-B-0/0-Ca	jab
			pe - sat - 0/0-B-0/0-Ca	jab

### Micro Marsh

206	m	15	f - w - 3/1-A-3/3-Ca	flock
207	♂f m	15	f - w - 3/0-A-3/3-Ca	peck, jab
208	a	16	lp - d - 4/0-A-4/5-Ca	collected
209	a	16	lp - w - 3/0-A-6/5-Ca	
210	m	16	f - d - 2/2-A-3/3-Ca	flock

18 July



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Feeding Observations

21 July

FAR Marsh

211 m 09 pe(d)-sw- $\frac{1}{10}$ -B- $\frac{1}{10}$ -C probe  
black

212 a 09 tr-w- $\frac{3}{1}$ -A- $\frac{5}{15}$ -C peck-visual  
fp-w- $\frac{2}{1}$ -A- $\frac{5}{14}$ -C peck  
f-w- $\frac{2}{10}$ -A- $\frac{4}{15}$ -C

213 a 10 tr(d)-sw- $\frac{2}{10}$ A- $\frac{1}{6}$ -C

214 a 10 fp-w- $\frac{2}{1}$ -A- $\frac{3}{13}$ -C peck  
pe-sw- $\frac{3}{1}$ -A- $\frac{4}{6}$ -C

215 a 17 f-w- $\frac{4}{1}$ -A- $\frac{3}{12}$ -C peck

216 m 17 pe-sw- $\frac{2}{1}$ -A- $\frac{4}{12}$ -C

217 Pd 17 f-w- $\frac{3}{1}$ -A- $\frac{3}{13}$ -C

22 July

Central Marsh

218 a 17 pe(d)-sw- $\frac{1}{10}$ -B- $\frac{1}{10}$ -C long  
spiro job - orknewt

219 p 17 pe(d)-sw- $\frac{1}{10}$ -B- $\frac{1}{10}$ -C peck,  
visual

220 p 17 pe(d)-sw- $\frac{1}{10}$ -B- $\frac{1}{10}$ -C peck

221 a 17 pe(d)-sw- $\frac{1}{10}$ -B- $\frac{1}{10}$ -C job

23 July

222 Pd 16 fp-d- $\frac{4}{1}$ -A- $\frac{4}{12}$ -C peck stim.

24 July

Central Marsh

223 Pd 11 f-w- $\frac{2}{1}$ -A- $\frac{4}{16}$ -C

224 a juv 11 f-s- $\frac{3}{1}$ -A- $\frac{7}{16}$ -C

225 b 11 pe(d)-s- $\frac{1}{10}$ -B- $\frac{1}{10}$ -C peck

25 July

Central Marsh

226 m 09 pe-sw- $\frac{4}{10}$ -A- $\frac{1}{14}$ -C

227 m 09 pe(d)-pe- $\frac{1}{10}$ -B- $\frac{1}{10}$ -C



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Foxing Observations

[25 July]

Gashire Ridge

228 a 15 f-d- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck. flock.  
229 a 16 f-w- $\frac{3}{4}$ /o-A- $\frac{3}{4}$ /k-C pack  
... av. w/ju.  
230 Pd 17 f-d- $\frac{3}{4}$ -A- $\frac{3}{4}$ /k-C pack. flock.  
231 a 20 p-s-a- $\frac{3}{4}$ -A- $\frac{3}{4}$ /k-C probe  
p-e-o-a- $\frac{3}{4}$ -A- $\frac{3}{4}$ /k-C probe  
232 Pd 21 ch-w- $\frac{3}{4}$ -A- $\frac{3}{4}$ /k-C peck

26 July

T' I Thet

233 Pd 09 m-w- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck  
234 Pd 09 m-d- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck  
235 a 09 f-d- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck. flock  
236 a 09 m-w- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck. fl.  
237 Pd 10 m-d- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck. fl.  
238 a 09 lp-d- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck  
f-w- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck  
239 a 10 m-d- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C peck. fl.  
240 a 10 p-o-p-m- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C jab. fl.  
241 Pd 11 f-s-m- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C  
242 a 12 lp-d- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C

Central Marsh

243 a 14 f- $\frac{3}{4}$ -A- $\frac{3}{4}$ /s-C  
244 m 16 f(d)-w- $\frac{3}{4}$ -B- $\frac{3}{4}$ /s-C peck.  
collected 4.  
245 b 16 s-w- $\frac{3}{4}$ -B- $\frac{3}{4}$ /s-C peck

27 July

246 P 16 f(d)-s- $\frac{3}{4}$ -B- $\frac{3}{4}$ /s-C



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Feeding Observations

30 July

Micro-Mac - longbeak I

247 a 14 d-w- $\frac{1}{1}$ -A- $\frac{4}{5}$ -C peck

248 ♀ m 14 pe-pw- $\frac{1}{0}$ -A- $\frac{3}{5}$ -C peck

249 a 14 pe-sws- $\frac{1}{0}$ -A- $\frac{3}{5}$ -C peck

250 Pd 14 f-w- $\frac{1}{1}$ -A- $\frac{3}{5}$ -C peck

f-w- $\frac{1}{0}$ -A- $\frac{3}{5}$ -C

251 L.s. 14 pe-sws- $\frac{1}{0}$ -A- $\frac{4}{5}$ -C jab

252 m 14 po-pw- $\frac{1}{0}$ -A- $\frac{5}{5}$ -C

pe-pw- $\frac{1}{0}$ -A- $\frac{5}{5}$ -C jab

253 Pd 15 pe-sws- $\frac{1}{0}$ -A- $\frac{6}{6}$ -C

254 p 15 pe-sws- $\frac{1}{0}$ -A- $\frac{3}{3}$ -C

255 a 15 fp-w- $\frac{1}{1}$ -A- $\frac{4}{5}$ -C

256 p 15 pe-sws- $\frac{1}{0}$ -B- $\frac{4}{3}$ -C

pe-sws- $\frac{1}{0}$ -A- $\frac{5}{5}$ -C peck

F-s- $\frac{1}{0}$ -A- $\frac{3}{3}$ -C peck

pe-sws- $\frac{1}{0}$ -A- $\frac{3}{3}$ -C

257 p 15 pe-sws- $\frac{1}{0}$ -A- $\frac{3}{3}$ -C shallow jab

pe-sws- $\frac{1}{0}$ -A- $\frac{3}{3}$ -C peck 5

31 July

floating station

258 p 13 pe-sws- $\frac{1}{0}$ -B- $\frac{2}{2}$ -C jab

1 August

Drum Area

259 b 16 pe-pw- $\frac{1}{0}$ -B- $\frac{0}{0}$ -C peck

2 August

Micro-Mac

260 ♀ m 16 pe-s- $\frac{1}{0}$ -B- $\frac{3}{3}$ -C

261 Pd 14 m-d- $\frac{2}{2}$ -A- $\frac{3}{3}$ -C peck

F(d)-w- $\frac{0}{0}$ -B- $\frac{0}{0}$ -C jab

263 p 16 pe(d)-pw- $\frac{0}{0}$ -B- $\frac{0}{0}$ -C

264 b 16 pe(d)-sw- $\frac{0}{0}$ -B- $\frac{0}{0}$ -C peck + jab



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Feeding Observations

3 August

Beach Ridge Crossing

265 Pd 10  $\text{Xp-w-31-A-51c-C}$

266 Pd 11  $\text{F-w-31-A-41c-C}$

5 August East of Drum dredg. So. of drift pile

267 m 15  $\text{pe-s-10-B-91c-C}$  probe  
collected

268 a 15  $\text{F-s-91c-B-91c}$  jab + probe

269 P 15  $\text{pe-s-10-B-91c-C}$  shallow jab.  
collected 3

270 a 15  $\text{pe-s-91c-B-91c-C}$  jab  
collected

271 a 15  $\text{pe-s-10-B-91c-C}$  jab  
collected - 8H 799.

272 P 15  $\text{pe-s-10-B-91c-C}$  stick + jab  
collected - 8H 798.

273 m 15  $\text{pe-s-10-B-91c-C}$  jab

274 m 15  $\text{pe-s-91c-B-91c-C}$  jab

275 P 15  $\text{pe-s-91c-B-91c-C}$   
collected

276 a 16  $\text{m-w-31-A-51s-C}$

$\text{m-w-31-A-51s-C}$

277 Pd 16  $\text{m-w-31-A-51s-C}$

278 m 16  $\text{pe-su-21c-A-41c-C}$

279 a 16  $\text{fp-w-21-A-41c-C}$  jab

280 Pd 16  $\text{fp-w-21c-A-41c-C}$   
collected - 8H 805

281 a 16  $\text{fp-d-21c-A-31s-C}$  jab

$\text{pe-pw-11c-A-41c-C}$  jab

↓  
car  
Micro  
Mec



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1967

Feeding Observations

281 (cont.)

collections 2 of R-841903, 204

9 August

Shifting Station

282 a 20

pe-pw - 0/0-B-0/0-Co jab

283 p 20

pe-s - 0/0-B-0/0-Co v.shallow  
jab + peck.

284 a 20

pe-pw - 0/0-B-0/0-Co jab

f-w - 0/0-B-1/1-Co jab.  
rejects in contact pano.

285 a 20

pe-pw - 0/0-B-0/0-Co jab

286 p 20

pe-pw - 0/0-B-0/0-Co peck or  
shallow jab, vs before.

11 August

Drum Area

287 a 13

pe-pw - 0/0-B-0/0-Co jab

288 p 13

pe-sat - 0/0-B-0/0-Co v.s.jab.

12 August

Birketnick

289 a 16

f-w - 4/0-A-1/1-Co jab

collected 18/10

290 a 16

pe-pw - 0/0-B-0/0-Co jab

291 A.i. 16

pe-s - 0/0-B-0/0-Co flipping

292 p 16

pe-pw - 0/0-B-0/0-Co

14 August

Drum Area

293 p 14

pe-sat - 0/0-B-0/0-Co v.s.j.

294 a 14

pe-pw - 0/0-B-0/0-Co jab

ad. + immatures

Holmes' Marsh

295 imm. a. 15

pe-pw - 2/0-A-5/5-Co

296 (45) a 15

pe-pw - 0/0-B-0/0-Co jab

297 (10) a 15

fp-d - 2/2-A-4/4-Co jab



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Feeding Observations

297 [cont'd] pe - pw - 0/0 - A - 0/0 - Co job & probe  
298 a 16 po - pw - 0/0 - B - 0/0 - Co job  
... collected 1 of 12.  
299 (8) a 16 pe - pw - 1/0 - A - 1/6 - Co job & probe  
... collected 2 of 8.

15 August South Voth Area

300 a B tr - s - 0/0 - A - 0/0 - Co job  
301 (20) a 14 lp - d - 2/2 - A - 5/5 - Co job

16 August FAA

302 Ls 16 pe - s - 2/0 - A - 6/6 - Co job & probe  
303 (25) a 16 tr - s - 1/0 - A - 6/6 - Co job  
304 m 16 tr - s - 1/0 - A - 6/6 - Co job & probe  
... collected - sm 823

305 p 16 tr - s - 0/0 - B - 0/0 - Co  
306 a 16 tr - s - 0/0 - B - 0/0 - Co

17 August Tanglefoot I

307 m 15 pe - sw - 1/0 - A - 6/6 - Co job

18 August FAA

308 m 14 pe - pw - 3/0 - A - 8/8 - Co  
... collection

309 m 14 f - s - 0/0 - B - 0/0 - Co job

310 m 14 f - sw - 3/0 - A - 8/8 - Co

311 <sup>20+</sup> imm a 14 lp - d - 4/1 - A - 4/4 - Co  
... collection 2

312 Pd 15 lp - w - 4/1 - A - 4/4 - Co  
... collection

313 Pd 15 pe - s - 2/0 - B - 4/6 - Co



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Fleaing observations

314 m 15 pe-pw-0/0-B-0/0-Co jdb  
pe-s-0/0-B-0/0-Co jdb

19 August

Drum Area

315 (1S) p B pe-s-0/0-B-0/0-Co us.j.

316 L.S. (II) B pe-s-0/0-A-0/0-Co jdb

pe-pw-0/0-A-0/0-Co jdb

317 (3) L.S. B po-pw-1/0-B-6/6-Co jdb

318 (1S) imm.a. B po-sw-1/0-A-8/8-Co jdb, probe

Family Creek Area

319 Pd B (m-ch)-d-3/1-A-4/3-Co

320 (2) Tpd 14 s-pw-0/0-B-0/0-Co

321 (6) Pd 14 lp-t-1/2-A-4/4-Co  
pe-pw-0/0-A-0/0-Co

322 imm.a. 14 pe-pw-1/0-A-4/6-Co

323 m 14 tr-s-3/0-A-5/5-Co

324 Pd. 14 f-d-1/2-A-3/3-Co pack

325 m 14 tr-sw-2/0-A-6/6-Co

326 (3) L.S. 15 po-pw-1/0-A-6/6-Co

327 Pd 15 lp-w-3/1-A-4/4-Co

328 a 15 lp-w-3/1-A-4/4-Co jdb

20 August

So. of FAA.

329 m 10 f-w-4/0-A-5/5-Co jdb

collected 2 - SN 833, 4

330 imm.a. 20 tr-sw-1/0-A-5/5-Co probe

collected - SN 832

331 m 20 pe-s-0/0-A-0/0-Co probe/jdb



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Feeding Observations

21 August

By trapline IV A-B

332	m	09	f-sw-2/0-A-6/4-C <sub>0</sub> job & probe
333	m	09	pe-sw-1/0-A-5/5-C <sub>3</sub>
334	m	09	pe-sw-2/0-A-8/8-C <sub>0</sub>
335	imm-a	10	pe-pw-3/0-A-6/6-C <sub>0</sub> lp-w-3/0-A-4/4-C <sub>0</sub> job
336	Pd	10	lp-d-3/0-A-4/4-C <sub>2</sub> collected

↓  
Beach  
Ridge

337	imm-a	14	pe-pw-0/0-B-0/0-C <sub>0</sub> job
338	[8] Pd	15	m-d-4/2-A-4/4-C <sub>0</sub> peck
339	[20+imm] a	15	f-w-3/1-A-3/3-C <sub>0</sub> job
340	L.S.	15	pe-g-w-0/0-A-0/0-C <sub>0</sub> job
Holmes'			pe-sa-0/0-A-0/0-C <sub>0</sub> job
Mars			f-s-0/0-A-0/0-C <sub>0</sub> job

↓  
Central  
Marsh

341	m	16	f-sw-4/0-A-6/6-C <sub>0</sub>
342	L.S.	16	f-sw-2/0-A-6/6-C <sub>0</sub>
343	m	16	f-s-3/0-A-5/5-C <sub>0</sub>
344	m	16	f-s-3/0-A-6/6-C <sub>0</sub>

22 August

By trapline III A-B, to Village Ridge

345	P	B	pe-pw-0/0-B-0/0-C <sub>0</sub> peck into water
346	imm-a	B	pe-pw-0/0-B-0/0-C <sub>0</sub>
347	[6] L.S.	B	pe-pw-0/0-B-0/0-C <sub>0</sub> job. collected 1.
348	Pd	B	f-w-3/0-A-5/5-C <sub>2</sub>
349	[8] a	14	lp-d-3/0-A-4/3-C <sub>1</sub>
350	[5] a	14	lp-w-3/0-A-4/2-C <sub>0</sub>
351	Pd	14	lp-w-2/0-A-4/2-C <sub>0</sub> peck



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Feeding Observations

22 August	352	a	14	lp-w-3/1-A-4/2-C
	353	a	14	lp-w-3/1-A-4/2-C
	354	m	15	po-pw-0/0-B-0/0-Co jab pe-s-0/0-B-0/0-Co jab pe-sw-2/0-B-0/0-Co jab
	355	L.S.	15	pe-pw-1/0-B-8/8-Ce
	356	L.S.	15	pe-s-2/0-A-4/4-Co
	357	L.S.	15	pe-pw-1/0-B-5/5-Co jab
	358	L.S.	15	pe-sw-2/0-B-5/5-Co jab
	359	m	15	pe-pw-0/0-B-0/0-Co jab
	360	imm a	15	pe-pw-4/0-B-9/0-Co probe
	361	L.S.	15	pe-pw-4/0-B-9/0-Co probe
	362	L.S.	15	f-d-2/0-A-4/3-Co jab
	363	Pd	15	m-d-2/2-A-4/3-Co peck collected
	364	Pd	15	f-d-2/1-A-4/4-Co peck
	365	m	15	pe-pw-0/0-B-0/0-Co jab
	366	L.S.	15	po-pw-0/0-B-0/0-Co jab
	367	L.S.	15	pe-pw-0/0-B-0/0-Co jab pe-s-2/0-A-4/5-Co jab
	368	m	15	pe-pw-2/0-B-4/4-Co
	369	Pd	15	pe-pw-2/0-B-4/4-Co
	370	ad.a	15	pe-pw-2/0-A-7/4-Co lp-d-2/0-A-2/1-Co lp-d-2/0-A-2/1-Co
	371	Pd	15	pe-sw-9/0-B-0/0-Co peck
	372	Ls	15	pe-pw-1/0-B-6/6-Co jab
	373	a	15	lp-d-2/0-A-3/2-Co jab



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# Feeding Observations

23 August

No. Meadow Lake

374 Pd 17 pe-s-<sup>2</sup>/0-A- 5/4-Co

375 imm a 17 pe-sw-<sup>2</sup>/0-A- 5/5-Co job.  
collected 2

376 a 17 lp-w-<sup>3</sup>/0-A- 4/3-Co

Central Marsh 377 Ls. 18 pe-pw-<sup>0</sup>/0-A- <sup>0</sup>/0-Co job.  
collected 1 of 12

24 August

Faa

378 Pd 14 f-s-<sup>2</sup>/1-A- 5/5-Co

379 m 15 f-sw-<sup>3</sup>/0-A- 8/8-Co collected

25 August

Faa

380 m 11 f-sw-<sup>3</sup>/0-A- 8/8-Co

collected 1

26 August

Faa Vict - Leucidegen's site

381 Pd 16 lp-w-<sup>4</sup>/1-A- 5/4-Co

collected lone bird

27 August

Central Marsh

382 m 17 f-s-<sup>3</sup>/0-A- 4/3-Co

collected

383 m 17 f-sw-<sup>3</sup>/0-A- 4/3-Co

collection

28 August

Baner Airport

384 m 11 -pe-



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insect samples



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Berlese Soo Sampling

2 August

8 Soo samples collected from Central Marsh, near Emergence trap and tanglefoot II: 5 & 6. Put in funnels to Aug 2.

funnel #

5 Aug - A.M.

1

2

3

2 ea. P. hawaii: 15 mm, 17 mm.

4

5

2 ea. P. hawaii: 18 mm, 15 mm.

6

6 ea P. hawaii: 16, 16, 16, 13, 16, 15 mm.

7

1 ea. P. hawaii: 15 mm.

8

1 ea P. hawaii: 15 mm.

5 Aug. P.M.

1

2

3

3 P. hawaii: 15, 14, 16 mm.

4

5

6

7

8

1 P. hawaii - 12 mm

6 Aug. A.M.

#1 - 1 P. hawaii larva: 14 mm.

#3 - 7 Prionocera g. larvae - 4, 6, 6, 6, 6, 6 mm.  
In algal fil.



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Ber & 158

2 Aug. (cont.)

9 Aug. Atom

# 6 5 P. gracilisyla larvae 4, 5, 6, 6, 6, mm.  
in Alkohol

# 8 18 P. gracilisyla larvae - most 4 and 5 mm.  
1 - 2 mm., 1 - 3 mm.  
in Alcohol.



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Ber. Dixie Sea sampling

2 August

8 Soo cores from area N. of Beach Ridge crossing - same as samples of 30 July.

4 pons egg, 4 saturates trough.

Places in funnels 4 August.

Funnel # : 5 August, A.M.

1

2

2 P. hawaii : 15, 15 mm

3

4

1 P. hawaii : 17 mm

5

1 P. hawaii : 17 mm

6

7

8

5 Aug. P.H.

1 P. hawaii : 12 mm.

2 P. hawaii : 6 mm.

3

4

1 P. hawaii : 7 mm.

5

1 P. hawaii : 11 mm.

6

7

8 3 Proterocera g. : 4, 7 mm, 3 mm. - in alcohol.

6 Aug. A.M.

#2 1 P. hawaii larva - 6 mm.

9 Aug. A.M.

\*1 1 P. hawaii larva - 12 mm.



Machado  
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Berlese Soo Sampling

9 August

8 Soo cases collected from Central Mexico -  
near corner - on undisturbed f-s. 2/6 A-6/6 (c).  
Put into funnel. 2330

10 Aug. - A.M.

#1 1 P. hawaii: 10 mm

2

3

4 1 P. hawaii: 17 mm; 1 Prionocera q.: 26 mm

5 1 P. hawaii: 15 mm; 2 Prionocera: 31, 31 mm.

6 1 P. hawaii: 15 mm

7

1 Prionocera: 25 mm

8

11 August - A.M.

12 August - A.M.

#1 1 P. hawaii: 18 mm

1 P. hawaii: 5 mm

2

3 1 P. hawaii: 16 mm

4

5 2 P. hawaii: 15 mm, 14 mm.

6

7

1 P. hawaii: 13 mm

8

+ 2 found dry on table - probably #4: 15, 14 mm

[cont.]



Machado  
1967

Benthic larva samples

9 August (cont.) 8 boxes from Central West.

Hans picked 13 August -

#

1 2 P. hawaii : 20 mm, 9 mm.

2 1 P. hawaii : 5 mm,

3 4 P. hawaii : 15, 6, 7, 6 mm.

4 2 P. hawaii : 18, 7 mm.

5

6

7

8

∴ Bay base removed  $\frac{1}{4}$  of larvae  $> 10 \text{ mm} = 75\%$   
not the grip



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Bardess Bon Sampling

9 August

8 godwits collected from poly you bought  
system between shooting station & USGS site.  
tr-sw-21c-A-5/5-CO. Run into funnels 2330.

10 Aug - A.M.

#1

2

3

2 P. hanai : 15, 16 mm.

4

5

1 P. hanai : 15 mm

6

7

3 P. hanai : 17, 17, 15 mm

8

1 P. hanai : 18 mm

11 August - a.m.

Hand-pick - 13 Aug

#1

2

3

1 P. hanai : 15 mm

4

2 P. hanai : 16, 13 mm.

5

6

1 P. hanai : 17 mm

7

8

12 August - A.M. + P.M. -

#5 - 1 P. hanai : 9 mm

#8 - 1 P. hanai : 15 mm

∴ Bardess removes  $\frac{1}{14}$  larvae, or 93%.



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Berlese Box Sample -  
*Chironomus*

9 August

Sample of 8 cores from Central Marsh -  
counted after 72 hours:

#1 = 5

2 = 6

3 = 4

4 = 13

5 = 9

6 = 13

7 = 12

8 = 2

Sample of 8 cores from different system -

Diatom & Plant Material

#1 = 2

2 = 4

3 = 6

4 = 1

5 = 2

6 = 9

7 = 7

8 = 6



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Berllee Soo Samples

12 August

16 were from mesic tundra -

8 between Microtus and tanglefoot I

8 from Beach Ridge east of Micromes.

Poss into funnels 2300 17 August.

13 August

# 2 : 1 T. hammondi - 7 mm.

# 7 : 1 T. carinifrons - 21 mm.

# 12 : 1 P. hawaii - 10 mm.

# 1 : 1 P. hawaii - 10 mm. sample hand-picked.

14 August

# 4 : 1 P. hawaii - 7 mm.

# 6 : 1 P. hawaii - 16 mm

# 1 : 1 P. hawaii - 18 mm

15 August

# 14 : 1 T. carinifrons - 21 mm

11 : 1 P. hawaii - 17 mm

6 : 1 P. hawaii - 5 mm

5 : 3 P. hawaii - 10, 7, 6 mm

3 : 2 P. hawaii - 11, 7 mm

2 : 3 P. hawaii - 5, 7, 7 mm

16 August

# 2 : 1 P. hawaii - 7 mm

# 6 : 1 P. hawaii - 7 mm

[conc.]



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Berklee - Los Angeles

12 August

[cont]

Pens picked 18 August:

# 13 - 1 T. carinifrons - 22 mm

+ 1 in consolidated material. : II unknown.

T.c. - 8 mm.



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Barkless Soo Samples

16 August

16 soos samples from mesic tundra (f-w)

2-16 ~~EE~~ from Beach Ridge near FAA;

1-8 ~~EE~~ from Voth area - just N. of family creek.

Places in funnels 1730.

17 August

1 - 1 T. carinifrons - 10 mm

2 - 1 T. c. - 9 mm

3 - 4 T. c. - 7 mm

4 -

5 - 1 T. c. - 7 mm

6 -

7 -

8 - 1 P. Kannai - 16 mm

9 -

10 -

11 -

12 -

13 -

14 -

15 -

16 -

18 August, ft.

2 T.c. - 11, 0 mm

1 T.c. - 8 mm

1 T.c. - 15 mm

1 T.c. - 8 mm

1 P.h. - 11 mm

1 P.h. - 15 mm

1 P.h. - 10 mm

1 T.c. - 25 mm

1 P.h. - 10 mm

1 T.c. - 13 mm

1 T.c. - 10 mm

1 T.c. - 8 mm

2 T.c. - 13, 13 mm

2 T.c. - 13, 13 mm



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Berksg Sos Samples

22 August

#1-8: polygon trough - see - 2/0-A -  
from either side of Gerswick Road, South  
of FAA. Put into funnels 2200

24 Aug - 0800.

25 Aug - 0800

#1 - 1 P.h. - 15 mm

2 - 1 P.h. - 18 mm

3 - 1 P.h. - 19 mm

4 - 1 P.h. - 16 mm

5 - 1 P.h. - 13 mm

6 - 1 P.h. - 11 mm

7 - 4 P.h. - 19, 19, 16, 16 mm

8 - 1 P.h. - 19 mm

26 August - Hans - picked every other sample  
finds nothing. ∴ assume 100% efficiency.



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Berkeley Zoo Sample

22 August

♂ cores - #9-16 : from pond edge -  
site 8 SW - 2/0-A - ...

Near South End of trapline III A-B.  
Put into funnels at 2200.

24 Aug. - 0800

25 Aug. - 0800

#9 - 2 P.h. - 17, 17 mm.

10 -

11 -

1 P.h. - 17 mm.

12 -

13 - 1 Prionocera - 18 mm

14 -

15 -

16 1 P.han. - 20 mm

26 August - hand-picked every other sample -  
found nothing. . . assume 100% efficiency.



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Six Samples

24 August

8 samples from low polygon - wet, taken along Gaswell Road, S. of F.A.R. Hand-picked.

#1 - nothing

2 - 1 Tipula : 15 mm.

3-8: no tipulas! and I looked!  
one sample had 2 staphylinids.

25 August

5 samples mesic fens - F-W-3/0 A -  
taken just West of Lewellyn's Roth  
establishment and hand-picked in the field.

#1: 1 T.c. - 20 mm; 1 P.h. - 12 mm.

#2-5: nothing.

5 duplicates taken for barkless to see if  
small larvae were overlooked in hand-picking.  
Completely dried in funnels - nothing.



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Six Samples

25 August

8 samples from Gasline Ridge, 50 m. East  
of major roads.

#1 : 3 T.c. - 20, 20, 20 mm.

2 : nothing

3 : 1 t.c. - lost, but about as #1.

#4, 5, 6, 7, 8 : nothing.

again - dumped topsoil lines in area

8 samples from upland just west of Gasline  
and west of Gasline Ridge. Sp-wand - ?%  
Nothing! All 8 of them hand-picked.



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Berkeley Soil Samples

26 August

8 samples from saturated polygon trough on Beach Ridge, where it is crossed by Gaswell Road. Due into funnelle 1700.

27 August - 1500

#1 nothing

2

3

4

5

6

7

8

↓ !



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Berkelsee Sso Samples

26 August

8 samples from saturated and standing  
water pond margin - from beach ridge,  
where it is crossed by Gaswell Road.  
Pur into funnels 1700

27 August - 1500

#9 -

10 - 1 Prionocera: 20 mm; 1 P.h.: 26 mm

11 - 2 Prionocera: 30, 25 mm.

12 - 3 Prionocera: 22, 18, 18 mm

13 - 4 P.h. : 14, 15, 16, 17 mm

14 - 1 P.h. : 18 mm

15 - 1 P.h. : 16 mm

16 - 1 P.h. : 17 mm

28 August - 0400

#9 - 1 P.h. - 12 mm

10 - 1 P.h. - 17 mm

11 - 1 P.h. - 13 mm



# Pitfalls

3 July

## Beach Ridge Crossing

- 9 as ♂ tipula
- 8 as ♀ tipula
- 1 as ♀ Priocnemis
- 1 as ♂ Prodia
- 2 Staphylinids
- 2 Spiders

21 July

## tanglefoot site I -

- 3 ♂ tipula      1 ♀ tipula
- 1 ♂ Prodia
- 1 ♀ unknown tipulus? - saved in stop
- 1 Saloids
- 1 Ceratopid
- 1 Muscid

24 July

## 1 ♂ tipula      5 ♀ tipula

- 3 unknown tipulus? - saved w/ above - 21 July
- 8 Brachycerans
- 3 Saloids
- 13 Spiders
- 3 Staphylinids
- 5 large nematocera
- 10 sm. nematocera



Macken  
1967

# Tangle foot

30 June

I-1:

49 Small as dipterae  
| do. R Tenthredinina  
| Aspider  
| as Chironomus - ♂

I-2:

106 Sm. as. dipterae  
| do. Chironomus - ♀  
| as. Musca  
| Spiders

I-3:

26 Sm. as. dipterae  
| as tenthredinina  
| Spider

I-4

11 Sm. as. Diptera  
| as. Chironomus ♀

I-5:

25 Sm. as. dipterae  
| as. Chironomus ♀  
| as. Musca  
| Spiders  
| Hemiptera nymph - Saloidae

I-6:

7 Sm. as. Diptera  
| Spiders  
| Saloidae - nymph  
2 Sm. as. Chironomus - ♀, 1?



Mackean  
1967

tangle foot

30 June

II-1:

14 sm. as. Diptera

7 as. ♂ tenthredinids

4 sm. as. Chironomids

3 as. Muscids

II-2:

9 sm. as. Diptera

3 as. Muscids

8 as. tenthredinids

II-3:

16 sm. as. Diptera

5 as. Muscids

6 as. tenthredinids

2 as. Ichneumonids

1 Spiders

1 as. ♂ Tipula

5 sm. as. Chironomids

II-4:

12 Sm. as. Diptera

4 Spiders

2 Ichneumonids

4 as. tenthredinids

1 as. Muscids

II-5:

490 Sm. as. Chironomids

6 Spiders

4 Sm. as. Diptera (ctenophores)



Mackean  
1967

Tangle foot

[30 June] II-6:

310 Sm. as Chironomids  
6 Spinners  
2 sm. as Diptera  
1 as tenthecoines  
1 Salvinia nymph  
1 Muscidae adult

3 July I-1:

433 Sm. as Diptera  
4 as Chironomids - small  
1 Spider  
3 as tenthecoines  
1 ♂ Peocia  
2 as Chironomids - large  
1 as Muscidae

I-2:

23 large as Chironomids  
1 ♂ as Peocia

826 sm. as Diptera      1200-1300  
10 sm. as Chironomids  
3 as Muscidae  
5 as tenthecoines

I-3:

8 lg. as Chironomids  
552 Sm. as Diptera  
15 Sm. as Chironomids  
5 as Muscidae  
2 as tenthecoines



Machean  
1967

Tanglepoints

3 July] I-4:

1 ♂ Tipula  
310 sm. as. diptera

20 sm. as. chironomids

3 as. Muscids

3 lg. as. chironomids

I-5:

3 ♂ Tipula

215 Sm. as. diptera

16 Sm. as. Chironomids

4 lg. as. Chironomids

5 as. Muscids

1 as. tenthracinius

I-6:

2 ♂ Tipula

1 ♂ Pepigia

220 Sm. as. diptera

14 Sm. as. Chironomids

3 lg. as. Chironomids

1 as. Muscids

1 spider.

II-1:

4 ♂ Tipula

83 Sm. as. diptera

15 Sm. as. chironomids

16 as. Muscids

1 as. tenthracinius



Machens  
1967

Tanglefoots

[3 July] II-2:

1 ♂ Tipula  
5 July (cont'd) 30 Sm. Ad. Chironomids  
count so 5 sm. ad. Diptera  
5 Ad. Muscids  
6 Tenthredinids  
1 Saldidae  
5 Staphylinids

II-3

70♂ Tipula  
70♂ Pedicia  
21 Ad. sm. Chironomids  
98 Ad. sm. Diptera  
9 Muscids  
1 Spider  
2 Tenthredinids

II-4

41 ♂ Tipula  
7 ♂ Pedicia  
15 Sm. Chironomids (ad)  
64 Sm. Ad. Diptera  
2 Muscids  
12 Tenthredinids  
2 Spiders  
3 Ichneumonid



Mackeson  
1967

tangle foot

[3 July]

II-5

401 Sm. Ad. Diptera  
41 lg. Ad. Chironomids  
3 Muscids

II-6

507 Sm. Ad. Diptera  
1 lg. Ad. Chironomid  
1 sm. " "  
3 muscids

6 July

I-1:		F	M	T
	<u>tipula</u>	1	2	
	<u>Ferrisia</u>		1	
	<u>sm. ad. diptera</u>	149		
	<u>Chironomids - sm.</u>	6		
	<u>lg.</u>	4		
	<u>Muscids</u>	8		
	<u>Empidens</u>	1		
	<u>Tenothecimids</u>	3		
	<u>Schneemannids</u>	1		



Mackson  
1967

Tanglefoot

6 July]

I-2:

tipula

♀

♂

2

Pedicia

♂

2

Priocnemis

1

sm. ad. Diptera

222

Musca

11

Chironomus - sp.

8

sm.

10

Spiders

I-3:

tipula

♀

4

Pedicia

1

Priocnemis

1

sm. ad. Diptera

174

Musca

2

Chironomus - sp.

4

sm.

13

tentaculines

1

I-4:

tipula

♀

♂

6

sm. ad. Diptera

125

Chironomus - sp.

2

sm

11

Musca

3

tentaculines

1



Mackeson  
1967

tangle & flats

[6 July]

I-5:

Tipula

sm. ad. niptera

♂ 4

Chironomus sp.

1

sm.

4

Muscidae

tentheresiniae

4

1

I-6

tipula

♀

67

1

13

Pedicia

sm. ad. niptera

15

Chironomus sp.

2

sm

2

Muscidae

1

67

II-1:

tipula

sm. ad. niptera

35

Chironomus sp.

1

sm

1

Muscidae

4

tentheresiniae

6



MacLean  
1967

bayle's foot

[6 July]

II-2:

tipula

4

67

1

5

Foenicia

1

sm. ad. diptera

13

Muscios

7

tenthredinins

3

Ichneumonins

8

II-3:

tipula

4

67

3

11 (eleven)

Trionoxera

14

sm. ad. diptera

57

Chironomids - sm.

2

Muscios

5

tenthredinins

6

Ichneumonins

2

Spider

1

II-4:

tipula

4

67

2

7

Foenicia

1

30

sm. ad. diptera

52

Muscios

3

Chironomids - sm.

6

tenthredinins

1



Mackean  
1967

tangle forest

[6 July]

II-5:

(no tipulines)

Chironomidae - fm	-	2
	lfq	4
Muscidae		2
sm. ad. diptera		87
spiders		3

II-6

(no tipulines)

sm. ad. diptera		125
Chironomidae - lf.	-	16
	fm	1
Muscidae		4
Spiders		6

9 July I-1:

tipula	57	♀
Prionocera	3	
Procia	4	2
Chironomidae - lf.	7	
	fm	11
sm. ad. diptera	152	
Muscidae	5	
Spiders	2	
Tenthredinidae	3	
Achneumonidae	1	



I-2:



1962

*Chlorophytum comosum* (L.) Willd.

107

Tig. girl

1888

*Red*

— 5 —

111

11501-14

1920-1921

— 1 —

— 1 —

200

4      11

Chloro 6 9

1 - Sun 14

Masada 14

$\frac{1}{2} \cdot \frac{1}{2}^{\frac{1}{2}} = -\frac{1}{2}$

—  
—

1870-1871

*Leucostoma* *luteum* (L.) Pers. (syn. *Lamprospilus luteus* L.)



1967

## Piedmont, NC and NC

site - II.

	♂	♀	♂	♀	♂	♀
Tig.	16	1	1	1	1	1
Prion.	-	-	-	-	-	-
Red.	1	2	2	-	16	8
Chiron. sp.	-	-	-	-	1	-
" - sm	11	-	111	-	11	-
Muscids	11111111	-	1111	-	111111	-
Diptera	264	-	139	-	146	-
spiders	11	-	-	-	111	-
Tentac.	11	-	111	-	111	-
Ichneum.	1	-	1	-	-	-
Caeliidae	1	-	-	-	-	-
	- 4	-	- 5	-	- 6	-
	18	5	2	-	1	-
	-	1	3	2	-	-
Red.	33	7	1	2	3	-
Chiron. sp.	1	-	26 + 1	-	8	-
" - sm	111	-	111	-	-	-
Muscids	11111111	-	29 + 32	-	11	-
" - sm	139	-	681 (x4)*	-	396 (x3)	-
Spiders	111	-	1	-	11	-
Tentac.	11111111	-	-	-	-	-
Ichneum.	11	-	-	-	-	-

\*Count from 50 x 5 cm. only



Mackean  
1967

Tanglefoot

12 July.

I -

tipula

	M	F	G	F	G	F
♂	20	6	7	3	16	3
♀						

Pionocera

	M	F	G	F	G	F
♂	4	0	1	0	5	0
♀						

Peplis

	M	F	G	F	G	F
♂	34	7	26	4	12	2
♀						

Cematoxenidsp

	M	F	G	F	G	F
♂	2		1			6
♀						

sm

	M	F	G	F	G	F
♂	624		341			411
♀						

Brachyceridae

	M	F	G	F	G	F
♂	71		70			25
♀						

tentaculines

	M	F	G	F	G	F
♂	6		7			1
♀						

Spiders

	M	F	G	F	G	F
♂	4		6			2
♀						

tipula

	M	F	G	F	G	F
♂	31	8	51	11	29	10
♀						

Pionocera

	M	F	G	F	G	F
♂	2	0	2	0	2	0
♀						

Peplis

	M	F	G	F	G	F
♂	6	0	15	1	34	1
♀						

Cematoxenidsp

	M	F	G	F	G	F
♂	18		11			6
♀						

sm

	M	F	G	F	G	F
♂	522		439			382
♀						

Brachyceridae

	M	F	G	F	G	F
♂	38		59			68
♀						

tentaculines

	M	F	G	F	G	F
♂	1		1			3
♀						

Spider

	M	F	G	F	G	F
♂	1		0			0
♀						

Selarini

	M	F	G	F	G	F
♂	1		0			0
♀						

Ichneumonidae

	M	F	G	F	G	F
♂	0		1			0
♀						



1967

Picked up 12 - VII

II-

	-1	-2	-3
T.p.	2 2	10	26
Prion.	-	-	-
Ped.	5	2	31
chiron. - lg.	-	1	-
" - sm.	1	-	-
Muscids	11 11	28	111 111
Diptera	221	221	221
Spiders	-	1	1
Tenthre.	11	11	111
Ichneu.	-	-	11

X

	-4	-5	-6
T.p.	8	5	4
Prion.	-	-	-
Ped.	62 3	11** -	111 44
Chiron. - lg.	1	4	-
" - sm.	1	111	-
Muscids	1111111111	65	1111111111
Diptera	224	1228 x 4*	772 x 4*
Spiders	111	111	111
Tenthre	111	1	11
Ichneu.	1	1	11

\* Count from Rx 50 cm. only. \*\* eleven



Mackean  
1967

-Tangle foot

15 July I-1:

Ch - sat - 3/0 - A - 3/2 - C<sub>3</sub>

♂

♀

tipula

11

10

Pedicia

10

3

Nematoceara

112

Brachycera

5

I-2:

F - sat - 3/0 - A - 3/3 - C<sub>0</sub>

♂

♀

tipula

28

11

Prionocera

5

Tipula

20

1

Nematoceara

523

Brachycera

47

spiders

6

anthrenoids

2

I-3:

F - w - 3/0 - A - 3/3 - C<sub>1</sub>

♂

♀

tipula

3

1

Prionocera

3

Pedicia

13

Nematoceara ♂ -

Sm. 481

Brachycera III III III II

Spider - 1



Macklem  
1967

1 m, 1 foot

[15 July]

I-4: rp - d - 4/0 - A -  $\frac{4}{4}$  - co

	♂	♀
<u>Tipula</u>	24	4
<u>Prionocera</u>	-	-
<u>Pedicia</u>	2	-
<u>Nematocera</u>	525	
<u>Brachycera</u>	63	
<u>Theridinidae</u> - 1	- 1	
<u>Spider</u> - 1	= 1	
<u>Braconidae</u>	- 1	

I-5: m - d - 4/0 - A =  $\frac{4}{3}$  - Co

	♂	♀
<u>tipula</u>	24	6
<u>Prionocera</u>	-	-
<u>Pedicia</u>	6	-
<u>Nematocera</u>	457	
<u>Brachycera</u>	41	
<u>Braconidae</u>	1	

I-6: rp - d - 4/0 - A -  $\frac{3}{3}$  - Co

	♂	♀
<u>tipula</u>	22	11
<u>Pedicia</u>	1	1
<u>Nematocera</u>	706	
<u>Brachycera</u>	89	
<u>Braconidae</u>	3	



Macken  
1967

## Tangle facts

Set II - picked up 15-VII-67

15 July

	-1	-2	-3
Tipula	8 6 18 9	12 7 5 -	-
Pedicia.	7 -	-	-
Prionocera	1 -	-	-
Nematoxera	107 74 106 540	106	106
Brachycera	111 111 111 111 111 111	111 111	111 111
Spiders	-	-	"
Tenthredinids	11	11	"
Lepidopt. (gray)	1	-	-
Ichnaeum.	11	1	-
Trichoptera	11	-	-
Salticidae	-	1	-
Brachycera	-	-	1

17

	4	5	6	7
Tipsula				1
Cedris				15
Ericaceae			3	
Nanocera	3.3	8.5	3	82
Brodycera	100%	10%	23	
Spiders	100 = 1		3	
Farthrediniid	101			
Ichnaea	101			
Tephritis				



Mackean  
1967

Tanglefoot.

[15 July] II-1:

w-d - 21-A - 21-5



Mackean  
1967

Tangle foots

18 July I-3:

I:

	(1)	(2)	(3)	
	♂	♀	♂	♀
<u>tipula</u>	2	2	7	1
<u>Prionocera</u>	-	-	1	0
<u>Pesicia</u>	-	-	2	0
<u>Nemotocera-lp.</u>	-	-	2	0
sm.	73	132	145	
<u>Brachycera</u>	5	-	13	11
<u>Spiders</u>	1	-	1	1
<u>Braconidae</u>	2	-	-	1
<u>Hydnobius larva</u>	-	-	1	1

	(4)	(5)	(6)	
	♂	♀	♂	♀
<u>Tipula</u>	0	1	0	1
<u>Prionocera</u>	0	0	0	0
<u>Pesicia</u>	0	0	0	0
<u>Nemotocera-lp.</u>	0	3	0	0
sm.	55	215	264	
<u>Brachycera</u>	5	-	20	53
<u>Spiders</u>	0	-	1	1
sp. Staphylinidae	1	-	-	-
<u>Ichneumonidae</u>	-	-	1	-
<u>Braconids</u>	-	-	-	3



Machree  
1967

Tanglefoot

Picked up 18 July

II-

1

2

Lionidae

♂  
1

Prionocera

Pedicia

7  
365

Nematocera lg. 3  
sm. 221

Brachycera 18

14

Tenthredinid 1

1

Bracnid - ♂ 1

cicadellidae 1

Spider 1

II

3

4

♂  
2

♀  
1

♂  
2

Tigula

♂  
3

Prionocera

♂  
4

Pedicia

1

Nematocera lg. 4  
sm. 46

Brachycera

6

4

Tenthredinid

Spider

1

Bracnid

1

Trichopteran

1



Hacheon  
1967

Tangle flats

Picked up 18 July

II-	♂	5	♂	6
Ticula				
Prionocera				3
Pedicia	4			2
Nematoceca sm.	42		1g 1	sm 22
Brachycera	70			59
Trichoptera	2			1
Spider				4
Braconid				3

21 July

II-	1	2
7		
Nematoceca - sm.	41	55
Brachycera	14	17
Braconid	4	7
Ichneumonid	5	1
Nematoceca - lg.		2

II-	3	4
Nematoceca - sm.	35	42
Brachycera	9	24
Braconid	1	6
Ichneumonid	1	1
Nematoceca - lg.	1	1
		2 or tipula



MacLean  
1967

Tang blocks.

[21 July] JB

	(3)	(6)
II - Nematoceridae	1	
Brechysaera	23	27
Solenaminae		
Bacanis	2	2
	1	1
frionoera	1	4



Tenebrionids

Picked up 21 July.

I	1	2
Brachycera	9	12
Braconids	2	6
Ichneumonids	1	-
Nematocera	19 sm 18	48
Tipulids sp.	2	2
Prionocera		♂ ♀
Spider	1	3

I	3	4
Tipula	1	
Prionocera		
Pedicia		
Tipulids sp.	1	4
Nematocera	19 sm 37	34
Brachycera	24	25
Spider	1	1
Braconids		1



# Tanglefoots

Picked up 21 July  
 (cont.)

I.

<u>Tipula</u>	♂ 5	6
<u>Prionocera</u>	1	
<u>Pedicia</u>		
Nematocera sm. 32	19. 1	79
Braconidae	16	30
Paracanids	2	2
Tipulidae	52	1



# Tangle foats

Picked up 24 July

I	1	2
<u>Tipula</u>		
<u>Prionocera</u>		
<u>Pedicia</u>		20
<u>Tipulid sp.</u>	1	
<u>Nematocera</u> sm. <sup>eg.</sup> <sub>1</sub> <sup>5</sup>		19
<u>Brachycera</u>	14	11
<u>Braconids</u>	4	
<u>Ichneumonids</u>		2
<u>Spiders</u>		3

I	3	4
<u>Tipula</u>	1	1
<u>Prionocera</u>		
<u>Pedicia</u>		20
<u>Tipulid sp.</u>	1	2
<u>Nematocera</u> sm. <sup>eg.</sup> <sub>1</sub>	1	
<u>Brachycera</u>	7	14
<u>Spiders</u>	19	27
<u>Braconids</u>	2	
<u>Ichneumonids</u>		4
		1



# Tanglefoot

Picked up 24 July

I

	5	6
Nematocera sm.	31	35
Brachycera	3 <del>1</del> 3	40
Braconids	3	2
Ichneumonids	2	
Spiders	1	
Tipula		1 ♀
Tipulid sp.		3 ♀'

II

	1	2
Tipula	10 <sup>♂</sup>	
Nematocera sm	18	sm. 39
Brachycera	28	39
Cicadellidae	-1	
Ichneumonids	3	
Lepidoptera		2 ♀'
Braconids		15

II

	3	♂	♀	4	♂	♀	
Tipula			1		2		
Nematocera sm.	19						
Brachycera	10						
Brachycera	11						
Ichneumonidae	1						
Braconidae	5						
Tipula sp.				1			
Spider					1 ♂	1 ♀	
							1



Tanglefoots

Pickledays 24 July.

II

5  
♂

6

Prionocera

1

Nemotocera sm. 41

4

Brachycera

21

19

Trichoptera

1 2

Braconids -

2

4

Tipulids.

1 2



## Tangle roots

Picked up 27 July

I

	$\sigma^1$	$\sigma^2$	$\sigma^1$	$\sigma^2$
<u>Tipula</u>	1		1	
Tipulid sp.	1	$\frac{1}{2}$	1	1
Brachycera	7			33
Nematocera sm.	9			sm. 11
Braconids	7			3
Ichneumonids	1			11
Lepidoptera	1			
Tenthredinids	1			
Spider			2	

I

	$\sigma^3$	$\sigma^4$	$\sigma^3$	$\sigma^4$
<u>Tipula</u>	1			
Tipulid sp.	1		3	9
Brachycera	31			39
Nematocera	18			17
Braconids	1			5
Ichneumonids	3			1
Spiders	1			1



## Tanglefoots

Picked up 27 July

I

♂ 5 ♀

♂ 4 ♀

1

Tipula

Tipulid sp.	1	2
Brachycera	19	55
Nematocera	24	82
Braconids	8	6
Ichneumonids		2
Spiders		2

II

♂ 1 ♀

2

Tipula

Tipulid sp.	1	
Brachycera	28	44
Nematocera	<sup>19</sup> sm. 9	<sup>1</sup> 19
Braconids	15	26
Ichneumonids	3	
Spider		1

II

♂ 3 ♀

4

Tipula

Tipulid sp.	1	2	
Brachycera	5		13
Nematocera	20		14
Braconids	11		6
Ichneumonids	2		
Spider	2		



# Tanglefoots

Picked up 27 July

II

5

6

## Tipula

Tipulid sp.

Brachycera 35 28

Nematoidea 5 4

Braconids 1 6

Trichoptera 1 2

Ichnaeumonids 2

Spider 1



Tangle foot

Picked up 30 July

I	$\delta$	$\varphi$	II
Tipulid sp.	1	2	
Nematocera an.	5		5
Brachycera			1
Ichneumonid			2

I	$\delta$	$\varphi$	II	$\delta$	$\varphi$
Tipule		1			
Tipulid sp.	1	2		3	
Brachycera	1			1	
Nematocera	8			3	
Ichneumonid	1				
Braconid				1	

I	$\delta$	$\varphi$	II	$\delta$	$\varphi$
Tipulid sp.		2			1
Brachycera	2			1	
Nematocera	3			10	
Braconid	1			2	



Tangle foot

Picked up 30 July

II

	$\delta$	$\varphi$	$\delta$	$\varphi$
Tipulid sp.	1	3	3	1
Nematocera	3			4
Bracnid	1			2
Spider				1
Saldid				1

II

	$\delta$	$\varphi$	$\delta$	$\varphi$
Tipulid sp.	2	2	1	
Brachycera	1			
Nematocera	5			13
Bracnid	1			2
Ichneumonid				2

II

	$\delta$	$\varphi$	$\delta$	$\varphi$
Tipulid sp.	1	1	1	1
Brachycera	2			3
Nematocera	2			4
Bracnid	1			2
Ichneumonid				3



MacLean  
1967

tangle foot

Picked up 2 August:

I -

	<u>1</u>	<u>2</u>
Brachyceridae	5	6
Nematocera	8	8
Ichneumonidae	4	8
Spiders	3	5
Braconidae	3	4

	<u>3</u>	<u>4</u>
Brachyceridae	9	9
Nematocera	17	4
Ichneumonidae	10	1
Braconidae	5	2
Spiders	4	0

2 tipulids sp.

1 ♂ as. Tipula

	<u>5</u>	<u>6</u>
Brachyceridae	13	23
Nematocera	2	11
Ichneumonidae	2	4
Braconidae	21	14
Spiders	0	0

2 tipulids sp.



Mackean  
1967

-Tangle foot

Picked up 2 August:

II -

Brachycera	11	2
Nematocera	7	5
Ichneumonidae	3	2
Braconidae	11	26
Spiders	0	0

3

6

Brachycera	12	16
Nematocera	5	16
Ichneumonidae	3	3
Braconidae	22	5
Spiders	6	1

1 tipulid sp.

1 Saloidea

1 tipulid sp

5

6

Brachycera	12	13
Nematocera	10	21
Ichneumonidae	10	12
Braconidae	3	4
Spiders	2	2

1 Saloidea

3 tipulid sp.



# Tanglefoot

Picked up 5 Aug. '67

I

	$\sigma$	$\frac{1}{2}$	$\sigma$	$\frac{2}{2}$	$\sigma$	$\frac{2}{2}$
Tipulid sp.		1				2
Brachycera		1				3
Nematoceps sm.	$\frac{19}{2}$	5			$\frac{1}{1}$	31
Ichneumonidae		2				6
Spiders						2
Braconids		1				

I

	$\sigma$	$\frac{3}{4}$	$\sigma$	$\frac{4}{2}$
Tipulid sp.	$\frac{8}{2}$	1	$\frac{5}{2}$	2
Brachycera				4
Nematoceps sm.	$\frac{19}{2}$	23		14
Ichneumonid		7		2
Braconid				1
Spider		1		

I

	$\sigma$	$\frac{5}{2}$	$\sigma$	$\frac{6}{2}$	$\sigma$	$\frac{7}{2}$
Tipulid sp.	1	2	2	6		7
Brachycera		1				9
Nematoceps sm.	$\frac{19}{2}$	9				13
Braconids		5				9
Ichneumonids						3
Spider						1



## Tanglefoot

Picked up 5 Aug. '67

II

1

2.

tipulid sp.	1	2 (sex?)
Brachycera	0	2
sm Nematocera	8	16
Braconidae	6	4
Ichneumonidae	0	-
Spiders	1	-

II

3

♂ ♀

4

♂ ♀

Tipulid sp.	1	1
Brachycera	2	2
Nematocera	19	15
Braconid	1	2
Ichneumonid	-	1

II

5

♂ ♀

1

Tipulid sp.		
Brachycera	2	3
Nematocera	14	25
Braconid	-	2
Ichneumonid	-	1



Mackea  
1967

tanglefoot

Picked up 11 August (6 days)

I -	1	2
Brachycera	9	3
Nematocera - sm.	6	32
Ichneumonidae	3	12
Bracconidae	1	5
tipulid sp.	3	2

1 ♂ tipula!

	1	2	3	4 (See note)
Brachycera	1	2	12	
Nematocera - sm.	9		3	
Ichneumonidae	1		5	
tipulid sp.	1			1
Bracconidae				34

	5	6
Brachycera	10	15
Nematocera - sm.	9	13
Ichneumonidae	6	11
Bracconidae	9	9
Nematocera - lg.	9	5
tipulid sp.		1

note: #4 - bird predation (dove + hawk on board)  
or animals blown away. Identified by legs  
left on board.



Mackean  
1967

Tanglefoots

Picked up 11 August (6 Days)

II -	1	2
Brachycera	2	?
Sm. Nematocera	1	3
Ichneumonidae	-	4
Bracconidae	6	27
Spiders	1	-
tenrecidina larva	1 - 2 mm	-

	3	4
Brachycera	2	4
Sm. Nematocera	0	8
Ichneumonidae	3	6
Bracconidae	7	5
tipulids sp.	1	-
lyg. Nematocera	1	-
Spiders	1	1

	5	6
Brachycera	1	7
Sm. Nematocera	20	51
Ichneumonidae	6	3
Bracconidae	0	0
Spiders	1	0



MacLean  
1967

+ ang. foot

Picked up 17 August :

I -

	<u>1</u>	<u>2</u>
Sm. Nematocera	19	20
Brachycera	4	0
Braconidae	2	1
Schizomyiidae	1	0
Ten Thredinidae	5	1
Spiders	1	4
lg. Nematocera	—	1

	<u>3</u>	<u>4</u>
Sm. Nematocera	20	4
Brachycera	7	4
Braconidae	1	1
Schizomyiidae	18	2
Ten Thredinidae	3	1

	<u>5</u>	<u>6</u>
Sm. Nematocera	8	7
Brachycera	2	4
Braconidae	6	7
Schizomyiidae	2	16
Ten Thredinidae	3	3
Spiders	3	—
tipulid sp.	—	2



MacLean  
1967

+ Tanglefoots

Picked up 17 August -

IF -

Sm. Nematocera	1	21
Brachycera	5	22
Bracidae	3	1
Ichniunomidae	12	27
Tenthredinidae	1	1
tipulid sp.	1	1

Sm. Nematocera	31	57
Brachycera	2	1
Bracidae	5	2
Ichniunomidae	6	—
Tenthredinidae	1	2
tipulid sp.	1	1

Sm. Nematocera	139	51	103
Brachycera	6	—	3
Bracidae	1	—	3
Ichniunomidae	2	—	7
Tenthredinidae	3	—	2
Spiders	—	—	?

\* mostly very small.



Hackett  
1967

Fang defects

Picked up 23 August

I -

Sm. Nematocera	41	21
Brachycera	3	5
Bracidae	1	2
Ichniunomidae	13	16
Spiders	-	4
tipulid sp.	-	1

	31	41
Sm. Nematocera	31	17
Brachycera	2	5
Bracidae	3	5
Ichniunomidae	13	5
Cordilid ad	-	1
tipulid sp.	1	-

	51	61
Sm. Nematocera	33	26
Brachycera	1	7
Bracidae	5	11
Ichniunomidae	6	5
Spiders	2	5



Mackeson  
1967

Tangle facts

Picked up 23 August

I-

	1/	2/
Sm. Nematocera	25	12
Brachycera	1	3
Braconidae	18	35
Ichneumonidae	2	21
tipulids sp.	3	-
Spiders	-	1

	3/	4/
Sm. Nematocera	37	74
Brachycera	0	0
Braconidae	15	9
Ichneumonidae	8	4
tipulids sp.	1	1
Spiders	1	1

	5/	6/
Sm. Nematocera	165 *	* 66
Brachycera	1	6
Braconidae	2	6
Ichneumonidae	5	16
tipulids sp.	-	-
Spiders	1	-

\* very small mostly



Mackean  
1967

tanglefoots

Picked up 27 August - 4 days.

I -

Sm. Nematocera

1/

27

2/

37

Brachycera

2

Braconidae

1

Ichneumonidae

3

?

Spiders

4

?

Tipulidae sp.

1

1

3/

Sm. Nematocera

26

4/

31

Brachycera

-

-

Braconidae

-

2

Ichneumonidae

3

-

Spiders

-

ad. Dytiscid beetles

5/

Sm. Nematocera

21

6/

10

Brachycera

-

-

Braconidae

2

3

Ichneumonidae

2

5

Spiders

-

7



Mackean  
1967

Tanglefoots

Picked up 27 August - 4 days.

II -

Sm. Nematocera

1/  
5

2/  
4

Brachycera

-

-

Braconidae

4

L

Ichneumonidae

-

-

Sm. Nematocera

3/

4/

1/

\* 201

Brachycera

-

-

Braconidae

3

3

Ichneumonidae

-

-

\* all the same sp - a true Chironomidae

must have been some kind of swarm.

Sm. Nematocera

5/

6/

12

20

Brachycera

1

-

Braconidae

-

-

Ichneumonidae

2

2



Marion  
1967

Tadpoles - ~~Common~~

13 June

From Pond - extraction of 8 eggs  
by pond dipper - taken on 17 June  
mm: 13, 16, 15, 13, 14, 15, 13, 17, 17, 17, 17, 16, 19, 19

17 June

Extraction - 10 eggs between N. &  
S. Meadow lake by Beaver:  
mm: 16, 15, 17, 12, 15, 15, 14



Mackee  
1967

Prionocera gracilistyla

30 June

First adult - a ♂ caught in  
one of the Black Pine pine  
traps.



Mackay  
1967

Tipula caninifrons

13 June

From Dow's Edge Road taken near  
Eda - 8 cores extracted by Berlese:

mm: 19, 19, 20

30 June

First adult - a ♂ stuck on tanglefoot

II -



Marken  
1967

Chironomidae

17 June

1st pupa appeared in an isolated  
sample taken by the author near the  
Midden lake.

21 June

Adults appeared on the surface  
today in fair numbers. Weather was again  
quite warm.

25 June

Weather has been colder - few  
adults seen.

30 June

Warmer weather brings good  
numbers - appear to be all of 1 species -  
a large one.



MacLean  
1967

Insect samples - sex ratio

15 July

Material removed from 25 can traps at tangleface site #1:  
(counted 15 July and saved)

	♂	♀
<u>Tipula</u>	1603	426
<u>Prionocera</u>	10	1
<u>Pedicia</u>	474	130

Material was picked from tundra surface:

	♂	♀
<u>tipula</u>	181	61
<u>Pedicia</u>	103	3
<u>Prionocera</u>	4	3

Vacume samples:

	♂	♀
<u>Tipula</u>	17	1

18 July

From tangleface 1 can traps:

	♂	♀
<u>tipula</u>	87	45

889911-43











